FINAL

Capital Investment Program

FY2003-FY2007

Massachusetts Bay Transportation Authority
Jane Swift, Governor
James H. Scanlan, Acting Secretary & MBTA Chairman
Michael H. Mulhern, General Manager

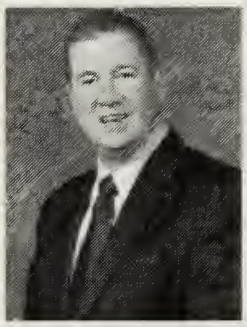
Moving People-
106 Years of Pride and Progress

Mission Statement

With quality customer service as our guiding principle, the MBTA strives to be a premier public transit authority through our diverse and talented workforce.

Massachusetts Bay Transportation Authority

April 11, 2002



Dear Reader,

With quality customer service as its guiding principle, the MBTA strives to provide safe, dependable, clean, affordable and accessible transportation throughout its service area. Fulfilling that mission for 104 years, the MBTA has built, operated and maintained an extensive network of light rail, rapid transit, buses, commuter rail, paratransit and ferries. And, we have been successful! Today, the Authority moves in excess of 1.2 million passengers on a daily basis and has grown to become the nation's fourth largest public transit agency by passenger volume.

On an annual basis, the Authority makes investment decisions regarding capital projects and then programs them in its capital investment program (CIP). Our goal is to first maintain the MBTA's system in a state of good repair by continually re-investing in infrastructure and second to ensure that sufficient capacity exists for future passenger growth by providing for a prudent amount of expansion.

This CIP is our second since the advent of Forward Funding. The investments outlined herein are driven by our priorities: a revitalization of our bus program through the purchase of new, alternative fueled buses and the construction new bus facilities, continued investments in core system infrastructure through the re-construction of stations and purchase of new rolling stock and prudent expansions to the commuter rail network such as Greenbush and to the urban transit network such as the Silver Line. Please note that this CIP illustrates that investments by the MBTA in the existing system continue to exceed 70% of the programmed capital spending, a priority for the Authority as articulated in the Program for Mass Transit.

In planning our future capital investments, the MBTA will continue to emphasize improving service for all its customers as well as increased system reliability. To that end, this CIP both provides for extensive investments in the existing infrastructure and allows for a prudent amount of expansion of the core system.

Sincerely,

Michael H. Mulhern
General Manager

Capital Investment Program
FY2003 – FY2007

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CELEBRATING 100 YEARS OF SERVICE

1897 • AMERICA'S FIRST SUBWAY • 1997

The Massachusetts Bay Transportation Authority (MBTA) created the Capital Investment Program (CIP) to provide an understanding of the Authority's planned capital expenditures for the current year and for a five-year planning horizon as well as to outline the need for future capital investment. The program bundles similar capital efforts together into structured projects and further into programmatic areas. The intent is to provide the reader with an easily understood and followed resource guide to the MBTA's capital program.

The Massachusetts Bay Transportation Authority

In 1897, America's first subway was constructed between the Park and Boylston Street stations. This half-mile section of subway is still operated today by the MBTA, making the MBTA the oldest continuously operating subway system in the country. In the 104 years since this service opened, Boston's public transportation system has grown in response to an ever-increasing demand for transportation services. The MBTA now serves 175 communities, providing transit alternatives for a population of about 2.8 million people over an area of 1,038 square miles.

Currently, the MBTA is the fourth largest mass transit system in the United States by ridership. It serves a daily ridership of approximately 1.2 million passengers. To provide these services, the Authority maintains 159 bus routes, 4 rapid transit lines, 4 streetcar routes, 4 trackless trolley lines, and 11 commuter rail lines. Its roster of equipment currently consists of 408 rapid transit vehicles, 181 light rail vehicles, 978 buses, 4 prototype alternative fuel buses, 40 trackless trolleys, 80 commuter rail locomotives, 362 commuter rail coaches, and 426 "RIDE" vehicles. Service is provided to 258 stations. System expansion efforts over the next five years will bring 23 new stations into service, including three on the Worcester Line, seven stations on the Greenbush Line and 13 on the new Silver Line.

A nine member Board of Directors manages the affairs of the Authority. The Secretary of the Executive Office of Transportation and Construction (EOTC) of the Commonwealth serves as the Chairman of the Board. The Governor of the Commonwealth appoints the other eight directors. The Board has the power to appoint and employ a General Manager and other officers. The Board also authorizes all capital program actions of $250,000 or above. An Advisory Board, consisting of a representative of each of the cities and towns constituting the Authority's service districts, approves the Authority's annual operating budget and reviews the Authority's long-term capital program.

Overview of the MBTA Transportation System

Rapid Transit System

The Authority operates over 46 miles of rapid transit rail routes. Three separate rapid transit rail lines (the Red, Orange and Blue Lines) serve 53 stations. Service is also provided by streetcars and light rail vehicles on 33 miles of additional rail routes (the Green Line and the Mattapan Line) serving 78 fixed stations.

Commuter Rail Service

The Authority operates over 400 units of passenger rail equipment (including locomotives and coaches) providing commuter service to and from 125 outlying rail stations and downtown Boston on 11 commuter rail lines. Commuter rail service is provided throughout much of the MBTA's service area and to over 50 communities outside the area.

Bus Service

The Authority owns 1,022 buses and trackless trolleys that operate on 161 routes and cover a total route mileage of about 710 miles. In addition to local services, the Authority operates a frequent schedule of express buses to and from downtown Boston and surrounding communities. The Authority also manages six local service subsidy programs that provide intracommunity and feeder services.

Other Services

A special program, the "RIDE," owns and operates 426 vehicles. The "RIDE" serves the elderly and disabled, making approximately 100,000 trips per month for work, medical treatment, social functions and shopping. The MBTA also operates commuter boat service between Boston and various points in Boston Harbor, as well as Hingham Harbor.

MBTA Capital Investment Program

The MBTA's FY03 - FY07 Capital Investment Program totals approximately $2.8 billion or an average of $563 million per year over the duration of the program.

Responsibility for management of the capital program is dispersed throughout the Authority. The Design and Construction Directorate oversees the construction of stations, tracks, signals, communications, bridges, tunnels and other infrastructure projects while ensuring compliance with environmental regulations. The Planning Department is responsible for studying future expansion concepts. The Operations Directorate has primary responsibility for vehicle purchases and the MBTA's electric power generation, transmission and distribution system. The Financial Directorate is responsible for cash flow, grant management, debt issuance and expenditure tracking. Various administrative departments share responsibility for the balance of the capital program.

To address the fact that no one department or individual had overall responsibility for the capital program, in 1998 the General Manager created the Capital Management Group (CMG).

The Capital Management Group (CMG)

The CMG goal is to maintain the transit infrastructure in a state of good repair and to provide for prudent expansion of service. The CMG consists of the Deputy General Manager, the Chief Financial Officer, the Chief Operating Officer, the Assistant General Manager for Design and Construction, the Assistant General Manager for Employee Relations and Administration, the Assistant General Manager for Finance and the Director of Planning. The CMG, with oversight by the General Manager, is responsible for management of the capital program including, prioritization of capital projects, capital project budgets and scopes, as well as key management decisions.

Capital Priorities

The MBTA prioritizes its capital needs based on the following criteria:

- The effectiveness of the Commonwealth's transportation system
- The impact of the project on:
  - Service quality
  - The Environment
  - Health and Safety
  - State of Good Repair (SGR)
  - Debt Service

Projects that receive the highest priority are:

- The greatest benefit with the least cost
- Transit commitments made in accordance with the CA/T and Accessibility obligations
- Capital expenditures for SGR activity.

Funding the MBTA's Capital Investment Program

Forward Funding

In 1964 the MBTA's original enabling legislation provided various forms of financial assistance from the Commonwealth to offset the MBTA's operating deficit. Such financial assistance was paid in arrears upon certification by the MBTA to the Commonwealth. In order to finance its capital program, the MBTA was authorized to issue indebtedness secured by its general obligation. If the MBTA lacked funds to pay such indebtedness, the Commonwealth was obligated to pay such amount, to which obligation the Commonwealth's full faith and credit was pledged (the "Commonwealth Guaranty").

As part of its fiscal year 2000 General Appropriations Act, the Commonwealth repealed and restated the MBTA's original enabling legislation (the "Enabling Act"). Effective July 1, 2000, the MBTA received a dedicated revenue stream consisting of assessments paid by the 175 cities and towns in the new MBTA district established by the Enabling Act (the "Assessments") and the greater of the amount raised by 20% of an existing statewide 5 cents sales tax and $645 million subject to upward adjustment under certain circumstances set forth in the Enabling Act (the "Dedicated Sales Tax" and, together with the Assessments, the "Dedicated Revenues"). The Enabling Act and the new financing mechanism for the MBTA established there under have been referred to as "Forward Funding" to reflect the fact that the MBTA's costs will no longer be funded in arrears.

Capital Program Funding

The MBTA's capital program is primarily funded by three major sources: revenue bonds, pay-as-you-go capital funds[1] and federal grants. Prior to Forward Funding, the MBTA's non-federal portion of the capital program was funded by General Transportation Revenue Bonds issued by the MBTA and supported by the Commonwealth Guaranty. Under Forward Funding the MBTA's share of the capital program will be primarily funded in the early years by revenue bonds secured by the Dedicated Revenues under the two separate credits stated in the previous paragraph. Assessments bonds will be generally secured by the Assessments paid by the 175 cities and towns and sales tax bonds will be generally secured by the Dedicated Sales Tax.

The MBTA would eventually risk its financial integrity, due to interest expenses incurred from leveraging the Authority's resources and fluctuating interest rate markets. Taking this into consideration, the MBTA is transitioning from complete reliance on debt financing to greater use of pay-as-you-go financing of capital projects. The transition from debt financing to pay-as-you-go capital funding will take time and discipline and depends, to some extent, on factors beyond the MBTA's control (e.g., the growth in future sales tax collections).

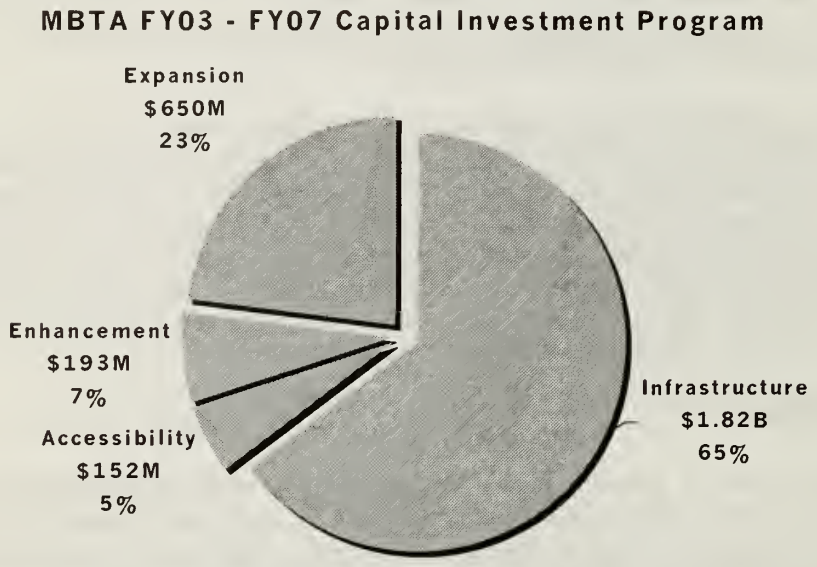
For the five-year period fiscal year 2003-2007, the MBTA anticipates that approximately $1.56 billion of revenue bonds will be issued to fund MBTA capital expenditures, approximately $1.13 billion of capital expenditures will be funded through federal grants and approximately $126 million of capital expenditures will be funded with pay-as-you-go capital funding, state reimbursement and other project financing.

In addition, the MBTA considers environmental justice in its capital investment decision-making process. The MBTA staff has worked with the Central Transportation Planning Staff (CTPS) and the Boston Metropolitan Planning Organization (MPO) to ensure that minority and low-income communities are treated equitably regarding the delivery of transportation services.

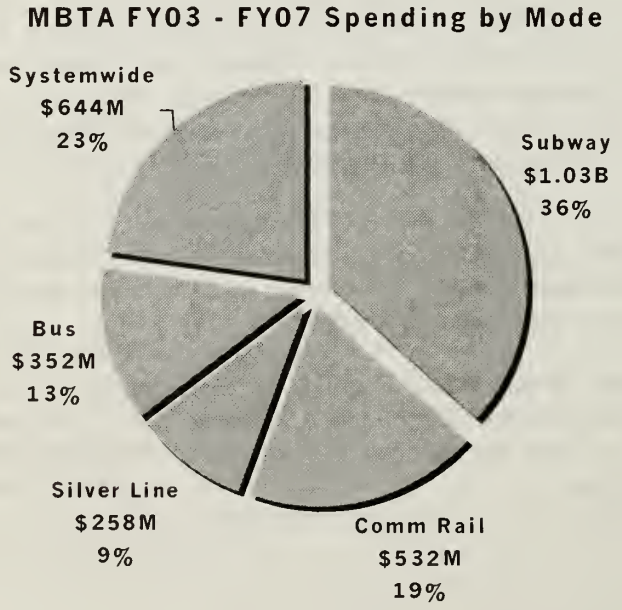
[1] Pay-as-you-go capital is funds available to the MBTA annually after expenses, including debt service have been funded.

Summary of the FY03 to FY07 Capital Investment Program

The FY03 - FY07 Capital Investment Program is broken down into four major programmatic areas: 1) reinvestment in the infrastructure; 2) accessibility improvements; 3) enhancement of existing service; and 4) system expansion efforts. The MBTA has programmed a total of $2.8 billion over the five-year period. The graph below represents the Authority's projected spending per programmatic area:



Each section of the FY03 – FY07 CIP is divided into the five modes of service provided by the Authority: 1) subway; 2) commuter rail; 3) the new Silver Line; 4) buses; and 5) systemwide. The projected spending per mode is shown in the chart below:



The CIP further groups anticipated expenditures into 15 smaller programmatic areas by mode as shown below. Under each mode and programmatic area, the plan provides detail on the specific assets that must be maintained. In addition, the chart lists the current level of program funding for each area and the relative percentage of each area's funding when compared to the entire FY03 – FY07 investment program.

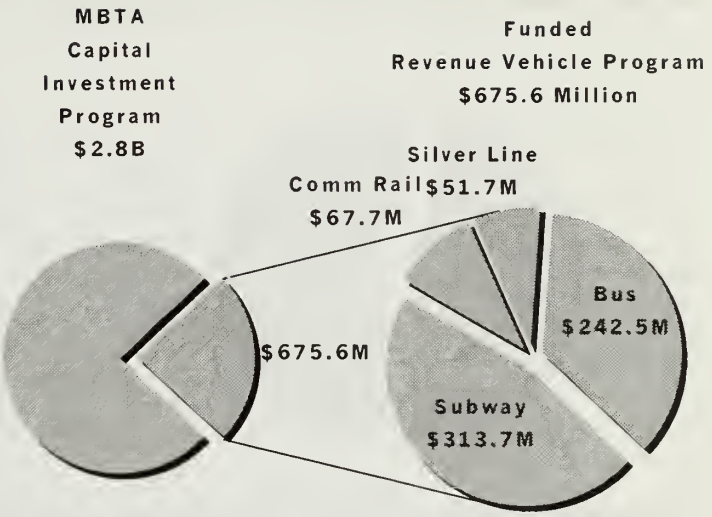
PROGRAM AREA	PROGRAM OVERVIEW	MODES	FY03-FY07 Funding ($ in mil.)	FY03 - FY07 Funding (in %)
INFRASTRUCTURE				
Revenue Vehicles	Includes all vehicles used to carry passengers in revenue service.	Subway, Commuter Rail, Silver Line, Bus	$675.6	24.0%
Non-Revenue Vehicles	Includes vehicles used to maintain the system and to support system administration.	Subway, Commuter Rail, Systemwide	$1.5	0.1%
Track/R.O.W.	Includes infrastructure within the right-of-way such as track, ties and ballast.	Subway, Commuter Rail	$105.6	3.7%
Signals	Includes all elements of the rail signaling systems.	Subway, Commuter Rail	$184.2	6.5%
Communications	Includes telecommunications, systemwide radios and the Operations Control Center.	Systemwide	$58.4	2.1%
Power	Includes the network to provide traction power to the rail system, as well lighting and other electrical elements.	Subway, Commuter Rail, Systemwide	$14.1	0.5%
Maintenance Facilities	Includes the rail car houses and bus garages where vehicle maintenance is performed.	Subway, Commuter Rail, Bus, Systemwide	$125.0	4.4%
Stations	Includes the subway and surface stations where passengers board MBTA vehicles.	Subway, Commuter Rail, Silver Line, Bus	$303.3	10.8%
Facilities	Includes administrative buildings and other structures needed to support transit services.	Subway, Commuter Rail, Systemwide, Tunnels, Walls, Culverts	$24.6	0.9%
Bridges	Includes all bridges maintained by the MBTA.	Systemwide	$14.9	0.5%
Fare Equipment	Includes all infrastructure associated with the collection of MBTA revenues.	Systemwide	$118.0	4.2%
ACCESSIBILITY	Encompasses actions that make accessibility improvements to MBTA stations and vehicles.	Systemwide	$152.3	5.4%
SYSTEM ENHANCEMENT	Encompasses capital improvements that enhance service on the existing MBTA system.	Subway, Commuter Rail, Bus, Systemwide, Parking, Environmental Compliance	$193.3	6.9%
SYSTEM EXPANSION	Encompasses the development, conceptual planning, design and construction of any effort to expand the scope of MBTA services.	Subway, Commuter Rail, Silver Line, Bus, Studies/Development	$649.7	23.1%
TECHNOLOGY/OTHER	Includes the infrastructure, such as computers, that are needed to support the provision of MBTA service, as well as other services that support the capital program.	Information Technology, Systemwide	$196.2	7.0%

Capital Investment Program
FY2003 – FY2007

PROGRAM OVERVIEW

The revenue vehicle fleet is one of the most visible and important components of the MBTA service network. The MBTA's fleet of revenue vehicles is composed of:

- 408 rapid transit vehicles serving the Red, Orange and Blue Lines
- 181 light rail vehicles serving the Green Line
- 362 commuter rail passenger coaches
- 80 commuter rail locomotive units
- 978 diesel motor bus coaches
- 4 prototype alternative fuel buses
- 40 electric trackless trolleys
- 426 RIDE vehicles



The MBTA adheres to a general standard lifecycle of 35 years for rapid transit and light rail vehicles, 25 years for commuter rail locomotives, 25 to 30 years for commuter rail coaches and 15 years for buses. The condition of each vehicle fleet is generally dependent on age, with several of the older fleets in need of major component replacements, overhauls and, in some cases, replacement. Without scheduled overhauls and planned retirements, the MBTA revenue vehicle fleet would experience unwarranted consumption of resources to maintain the existing fleet in operation and to maintain service reliability.

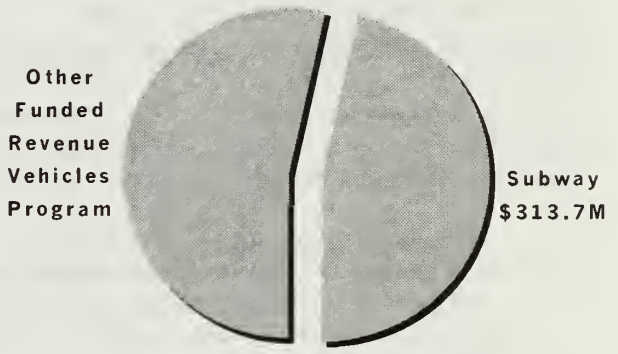
The current program devotes $675.6 million toward revenue vehicles. The revenue vehicle program represents 24.0% of the total capital investment program and is composed primarily of reinvestment in the subway system and the bus fleet. Major efforts in this program include new fleet procurements on the Green and Blue Lines and major component replacements on the Green, Orange, and Red Lines. Due to the need to replace up to 380 aging buses purchased between 1985 and 1989, the bus program also represents a relatively significant portion of the vehicle program.

Activity within the commuter rail vehicle program includes major efforts such as midlife overhauls for portions of the locomotive fleet. It is anticipated that in the future, the commuter rail fleet needs will represent a more significant portion of the capital investment program.

Finally, the anticipated implementation of Silver Line service in 2002-2003 is reflected in the $54.0 million programmed to acquire this new fleet.

REVENUE VEHICLES
SUBWAY

Funded Revenue Vehicles Program = $675.6 Million



The MBTA subway system consists of three rapid transit lines and one light rail line, each with a distinct fleet. The details of each fleet are below (with acquisition dates for each fleet indicated in parenthesis).

- There are 218 Red Line cars made up of three separate series of cars: 74 No. 1 cars (1969), 58 No. 2 cars (1988) and 86 No. 3 cars (1994). Preventive maintenance inspections are mileage based and occur on an 8,500-mile interval for the No. 1 and No. 2 cars and 10,000 miles for the No. 3 cars.

- The Blue Line fleet is comprised of 70 No. 4 cars (1979). The development of specifications for a replacement fleet was initiated in FY99. Preventative maintenance inspections are done on each car approximately once a month.

- The Orange Line fleet consists of 120 No. 12 series cars (1981). The acquisition of new Blue Line cars will enable up to 24 of the existing Blue Line vehicles to be transformed for Orange Line service. Preventive maintenance inspections are time-based and occur on a 90-day interval.

- There are 181 Green Line light rail vehicles (LRV) with three separate series of cars: 55 Boeing LRVs (1976-1983), 115 No. 7 cars (1986-88, 1997), and 11 active PCC Cars (1945-1946), which is the oldest fleet on MBTA property. The procurement of 100 No. 8 vehicles is currently underway and will enable the retirement of the 55-car Boeing fleet, thus increasing the fleet by 45 vehicles. Over the next three years, No. 8 vehicles will be acquired and put in use along the Green Line. Preventive maintenance inspections are mileage based for the Boeing LRVs and the No. 7 cars. The Boeing LRVs have a light inspection every 4,500 miles and a heavy inspection at 9,000 miles. The No. 7 cars are inspected at 5,500-mile intervals. The PCC cars are inspected on a 30-day basis.

Subway rolling stock generally has a useful life cycle of 35 years or more. However, due to the salt-air environment in which it operates, the Blue Line No. 4 cars are not scheduled to operate beyond a useful life of 27 years. The MBTA subscribes to a philosophy of on-going preventative maintenance for light rail and heavy rail vehicles. This approach keeps the vehicles safe and reliable at a reasonable cost. Preventative maintenance will be needed for repairing major components such as floors, pantographs, couplers, or overhead blower motors.

The current program devotes $313.7 million toward the subway vehicle program. This represents 46.4% of the total revenue vehicle program. The majority of the subway vehicle program is designated for the procurement of the new cars for the Green and Blue Lines. Other efforts include component replacements for the Red, Orange and Green Line fleets.

FUNDED PROJECTS: FY03 – FY07

There are 13 approved projects related to subway vehicles. All of the projects listed below (with the exception of the Green Line No. 8 and the new Blue Line procurements) represent preventative maintenance and will have a neutral effect on the operating budget. The No. 8 procurement will increase the Green Line fleet by 20% and the new Blue Line car procurement will increase the Blue Line fleet by 35%. Both will result in higher operating costs for operations and maintenance.

Mattapan Highspeed Line PCC Rebuild
This project will purchase various materials and labor to continue the rebuild of the PCC cars in the rehabilitation program. Work includes replacing major structural components, not covered under the original scope of the project, requires additional labor and materials. Successful completion of this program will enable Operations to maximize vehicle availability.

Red Line No. 1 Car Reinvestment
The purpose of this project is to do a component exchange on the Red Line No. 1 cars to ensure continued vehicle reliability and to extend vehicle service life.

Green Line No. 7/8 Car Modifications:

No. 7 Car Door Replacement & Adjustment
This project funds the overhaul of the door obstruction system on all No. 7 cars. Replacement of the rubber edges and pressure switches will help insure reliable operation and passenger safety.

Green Line No. 7/8 Cars Wheel Modification Profile
This project will provide the procurement of various materials and labor to upgrade the No. 7 & No. 8 cars wheel profile. This project will minimize vehicle and right of way maintenance in the future. It will also insure reliable wheel/rail interface, thus reducing wear over an extended period of time.

No. 7 Car WABCO Coupler Support Upgrade
This effort will upgrade and repair the No. 7 car WABCO coupler support rods and spherical bearings. Performing this modification would reduce this inspection costs and provide more reliable service.

No. 7 Car Brake Actuator Upgrade
This project will procure various materials and labor, which will be used to upgrade the No. 7 car brake actuators, with new reengineered parts. The actuator upgrade will improve the brake system reliability.

No. 7 Roof Overhaul
The scope of work for this project is to overhaul the No. 7 car roofs. Work includes repairing leakage caused by corrosion, which can lead to electrical damage. Roof repair will improve vehicle performance and save the electrical components from water damage.

Green Line Emergency Vehicle Replacement
This effort is for the replacement of the current Green Line emergency response vehicle. This vehicle responds to all Green Line emergencies. The project will lower operating costs due to fewer repairs.

Green Line Low Floor Cars (No. 8) Procurement
This project encompasses the procurement of 100 new low floor Green Line (No. 8) cars with spares. It also includes the modification of the existing No. 7 fleet to allow the No. 7 and No. 8 cars to operate together. This effort will make the Green Line accessible for disabled passengers and increase the overall size of the fleet.

Orange Line Fleet Capital Reinvestment
This project encompasses the overhaul of the suspension system and the replacement of the propulsion cam controllers for the entire Orange Line fleet. This will ensure continued vehicle reliability and allow the vehicles to reach its full service life.

Orange Line No. 12 Car Rebuild—Phase II
This project involves a door and component overhaul for the No. 12 cars, which will ensure continued vehicle reliability.

Orange Line Conversion Vehicles
This project will provide additional vehicles for the Orange Line. Options include the overhaul and conversion of 24 Blue Line vehicles to Orange Line vehicles in order to serve the Orange Line and the purchase of additional vehicles.

Blue Line Fleet Procurement
The project involves the purchase of 94 new cars for the Blue Line. The procurement will allow for six-car train service, and increasing line capacity by 2004.

Revenue Vehicles—Subway: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Mattapan PCC Rebuild	$11.40	$9.75	$1.65	$0.00	$0.00	$0.00	$0.00	$1.65	$0.00
RL-No. 1 Car Reinvestment	$5.00	$1.54	$1.99	$1.48	$0.00	$0.00	$0.00	$3.47	$0.00
GL-No. 7/8 Car Upgrades	$13.15	$0.70	$6.00	$6.00	$0.45	$0.00	$0.00	$12.45	$0.00
GL-Low Floor Cars	$207.13	$115.54	$70.32	$16.93	$4.33	$0.00	$0.00	$91.58	$0.00
OL-Fleet Reinvestment	$10.30	$7.77	$1.44	$1.09	$0.00	$0.00	$0.00	$2.53	$0.00
OL-Car Rebuild Phase II	$2.90	$1.09	$0.74	$1.07	$0.00	$0.00	$0.00	$1.81	$0.00
OL-Conversion Vehicles	$15.00	$0.45	$1.20	$1.60	$9.20	$2.55	$0.00	$14.55	$0.00
BL-Transit Cars (94)	$205.00	$19.30	$42.80	$32.70	$55.70	$39.00	$15.50	$185.70	$0.00
Total Program	**$469.87**	**$156.14**	**$126.12**	**$60.88**	**$69.68**	**$41.55**	**$15.50**	**$313.73**	**$0.00**

ANTICIPATED FUTURE NEEDS

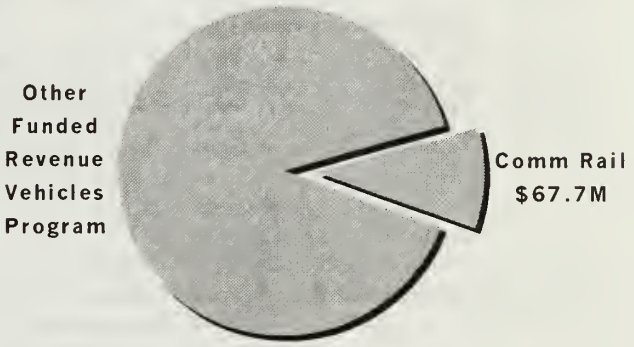
The MBTA has identified the following subway vehicle projects as future needs.

Red Line No. 1 Replacement Fleet
New cars will be needed to allow the retirement of the No. 1 fleet.

Red Line No. 2 Car Rehabilitation
A major component overhaul program will be planned in the future for the No. 2 cars.

REVENUE VEHICLES
COMMUTER RAIL

Funded Revenue Vehicles Program = $675.6 Million



The commuter rail fleet consists of 362 passenger coaches and 80 locomotive units.

Coaches

There are four series of coaches, including the Pullman Standard fleet, the MBB fleet, the Bombardier fleet and the Kawasaki fleet. The coach fleets are detailed below:

- 57 Pullman coaches (1979); this fleet was overhauled in 1995-96.
- 67 MBB coaches (1987-88).
- 146 Bombardier cars (1987, 1989-90).
- 92 bi-level double-decker Kawasaki coaches (1990-91, 1997). Additional (15) coaches will be added by 2002.

Locomotives

The revenue locomotive fleet is comprised of 80 units. The fleets are detailed below:

- 18 model F40PH-2 locomotives (1978, 1980); this fleet was upgraded in 1989-90.
- 25 model F40PH-2C locomotives (1987-88); a midlife overhaul is in process until 2002.
- 12 model F40PH-2M locomotives (1991, 1993).
- 25 model GP40-MC locomotives (1997-98).

Locomotives and coaches are typically considered to have a useful life cycle of 25 years. Generally top-deck overhauls are scheduled for locomotives on a 6 to 6.5 year schedule. Mid-life overhauls are usually conducted at 12.5 years and are designed to enable vehicle to reach its full service life in terms of power performance and dependability. Locomotive and coaches are typically replaced after the vehicle has met their 25-year life expectancy.

The current program devotes $67.7 million toward the commuter rail vehicle program. This represents 10.0% of the total revenue vehicle program. The majority of the commuter rail vehicle program is devoted towards major overhaul efforts for the locomotive fleet and the procurement of 15 new bi-level coaches.

FUNDED PROJECTS: FY03 – FY07

There are currently 9 approved projects related to commuter rail vehicles. Seven are major overhauls and the remaining two are procurements. The overhaul projects represent preventative maintenance and will have a neutral impact upon the Authority's operating budget. The procurement efforts will result in an increased fleet with increased operating and maintenance costs, thus resulting with a negative impact on the operating budget.

New Coach Procurement

The project involves the procurement of fifteen new commuter rail bi-level coach cars to support growing ridership and the addition of service along the Worcester line.

Commuter Rail Locomotive Equipment Procurement

This project consists of the purchase of 25 remanufactured locomotives to supplement the existing locomotive fleet. The fleet will be retrofitted with commuter rail equipment. The locomotives have been placed in service and current funding is for contract warranty.

Commuter Rail Top Deck Overhaul

F40PH-2/GP40-MC Locomotives

This project involves a top deck overhaul for 18 F40PH-2 and 9 GP40-MC locomotives. The overhaul will recondition both fleets for passenger safety and efficiency.

GP40-MC Locomotives (16)

This effort will overhaul the 16 remaining GP40-MC locomotives. Work consists of replacing rotating equipment such as power assemblies, turbocharger, camshafts, fuel injectors, pump compressors and fans. The completion of this overhaul will improve the service reliability of these units, help maintain On Time Performance standards and increase operating efficiency by reducing the number of failures.

F40PH-2M Locomotives (12)

A top deck overhaul is scheduled for 12 F40PH-2M. Work consists of replacing rotating equipment such as power assemblies, turbocharger, camshafts, fuel injectors, pump compressors and fans. This completion of this overhaul will improve the service reliability of these units, help maintain On Time Performance standards and increase operating efficiency by reducing the number of failures.

F40PH-2C Locomotives (25)

A top deck overhaul is scheduled for 25 F40PH-2C locomotives. Work consists of replacing rotating equipment such as power assemblies, turbocharger, camshafts, fuel injectors, pump compressors and fans. This completion of this overhaul will improve the service reliability of these units, help maintain On Time Performance standards and increase operating efficiency by reducing the number of failures.

Commuter Rail Mid-life Overhaul:

F40PH-2C Midlife Overhaul

This effort represents a standard mid-life overhaul for 25 F40PH-2C locomotives. The overhaul will recondition the fleet for passenger safety and efficiency.

F40PH-2M Midlife Overhaul

This effort consists of a standard mid life overhaul of 12 F40PH-2M locomotives. The overhaul will recondition the fleet for passenger safety and efficiency.

Passenger Coach Overhaul

This project funds the overhaul various aspects of the Authority coach fleet. Critical Safety and components providing passenger comfort components including trucks, brakes, couplers, draft gears, HVAC systems and toilets.

Revenue Vehicles—Commuter Rail: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Coach Proc (15)	$37.70	$35.71	$1.99	$0.00	$0.00	$0.00	$0.00	$1.99	$0.00
CR Equipment Proc	$33.08	$32.37	$0.71	$0.00	$0.00	$0.00	$0.00	$0.71	$0.00
Locomotive Top Deck OH	$14.80	$1.57	$1.39	$1.34	$0.00	$5.25	$5.25	$13.23	$0.00
Locomotive Midlife OH	$47.55	$19.64	$11.85	$11.29	$4.77	$0.00	$0.00	$27.91	$0.00
Coach Overhaul	$23.84	$0.00	$5.90	$6.00	$6.00	$3.20	$2.74	$23.84	$0.00
Total Program	**$156.97**	**$89.29**	**$21.85**	**$18.63**	**$10.77**	**$8.45**	**$7.99**	**$67.68**	**$0.00**

ANTICIPATED FUTURE NEEDS

New procurements to support planned system expansions, such as Greenbush, Fall River, and New Bedford are not included here, but are incorporated in the system expansion section of this plan. Several efforts have been identified as commuter rail fleet needs.

Locomotive Growth Procurement
Five additional locomotives may be needed in order to keep up with the expected commuter rail expansion.

Bombardier Coach Overhaul
This project consists of two separate midlife overhauls. The Bombardier A overhaul (40 cars) and the Bombardier B overhaul (101 cars). The overhaul will recondition the fleet for passenger safety and efficiency.

MBB Coach Midlife Overhaul
This effort involves a mid life overhaul for sixty-seven MBB coaches, as well as 5 Bombardier B control coaches. The overhaul will recondition the fleet for passenger safety and efficiency.

Kawasaki Truck Overhaul
The purpose of this work is to remove, disassemble, and replace worn components of one hundred and fifty four truck assemblies of Kawasaki coaches.

Kawasaki Coaches Midlife Overhaul
The project involves the overhaul of the 75 1990-1991 Kawasaki coach fleet. The 17 1998 Kawasaki coaches will require a separate overhaul at a later date.

Replace Pullman Fleet
The purpose of this project is to complete the replacement of the Pullman fleet by purchasing 36 bi-level coach cars.

Locomotive Procurement
The procurement of new locomotives is anticipated to support the retirement of the 18 F40PH-2 locomotive fleet.

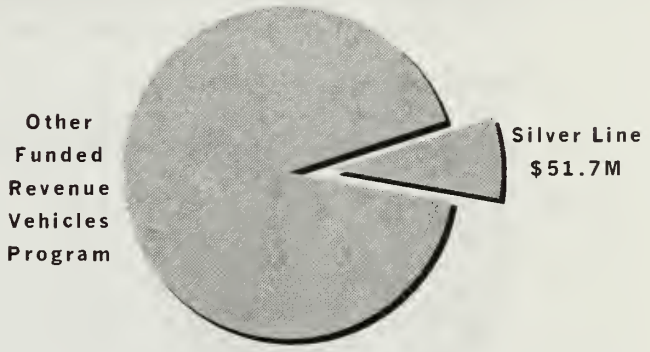
CTC1B Suppression Mod-Control Cars
This project involves the installation of momentary suppression (MS) in fifty-one control coaches for utilization on south side operations. By installing the MS systems, it will improve the operating efficiency of the car.

Bi-level Procurement
The project involves the purchase of 64 Bi-level coaches, which will allow the retirement of the MBB fleet and the Bombardier A fleet.

Switcher Locomotive Procurement Vehicle Needs
The need to replace three existing switcher locomotives is anticipated.

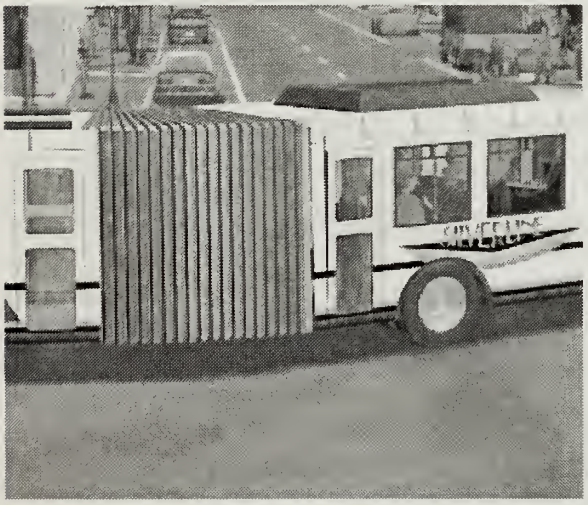
REVENUE VEHICLES
SILVER LINE

The MBTA is constructing the new Silver Line, a new Bus Rapid Transit (BRT) system with service on Washington Street and the South Boston Piers Transitway. The new Silver Line service will provide connections between residential neighborhoods and job centers in the Financial District and between South Station and the South Boston Seaport District. The service will also be coordinated with Massport to provide service to Logan Airport.



Vehicle procurements have been initiated in anticipation of Silver Line service on Washington Street (2002) and the South Boston Piers Transitway (2003). The vehicles are anticipated to have a useful life of 12 to 15 years. The introduction to the new fleets will entail additional operating funds for service and maintenance.

The plan devotes $51.7 million towards Silver Line vehicles. This represents 7.7% of the total revenue vehicle effort.



FUNDED PROJECTS: FY03 – FY07

There are two efforts for Silver Line revenue vehicles. One is the procurement of Washington Street Silver Line vehicles and the other is the procurement of the South Boston Transitway Silver Line vehicles. Both efforts will have a negative impact on the Authority's operating budget, as operation and maintenance costs will increase due to increased service levels and fleet expansion.

Washington Street Replacement Vehicles
This procurement project consists of 17 CNG powered 60-foot articulated, low floor accessible coach vehicles, to provide Silver Line service between Dudley Square and downtown Boston. Each vehicle will be equipped with "smart" bus features, which will provide in–vehicle visual and audio next stop and destination announcements. New vehicles will also have the ability to provide automatic vehicle location information to a planned Bus Operations Control Center.

South Boston Transitway Vehicles
This procurement consists of 32 dual mode, diesel-electric, low floor coaches to provide Silver Line service between South Station and Logan Airport. These vehicles will have the ability to provide automatic vehicle location information to the planned Bus OCC.

Revenue Vehicles—Silver Line: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Washington St. Repl. Veh	$13.30	$3.61	$3.57	$5.62	$0.50	$0.00	$0.00	$9.69	$0.00
S. Bos Transitway Veh	$42.10	$0.10	$11.63	$24.06	$6.32	$0.00	$0.00	$42.00	$0.00
Total Program	**$55.40**	**$3.71**	**$15.20**	**$29.67**	**$6.82**	**$0.00**	**$0.00**	**$51.69**	**$0.00**

ANTICIPATED FUTURE NEEDS

Once the Silver Line begins service, the Authority anticipates additional vehicle procurements.

South Boston Transitway Vehicle Procurement (Option)

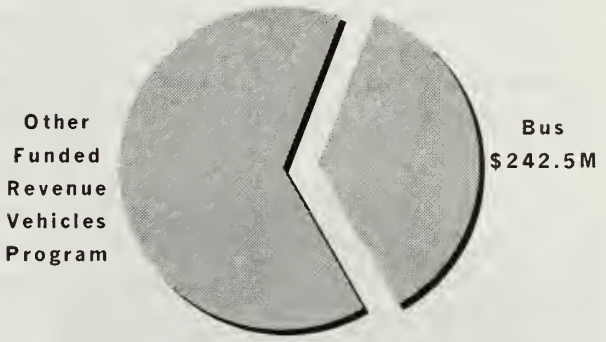
The Authority has an option to purchase 32 additional vehicles for the Silver Line.

Silver Line Phase II Vehicles

After the completion of the Silver Line, additional vehicles will be needed to provide full service. The scope of this project can be found in the Silver Line System Expansion section (p. 116) of this document.

REVENUE VEHICLES

BUS



This program includes vehicles to support the MBTA's bus, trackless trolley and demand-responsive (RIDE) services. The MBTA's bus and trackless trolley system is comprised of 159 routes. The RIDE, a paratransit service for individuals with mental and physical disabilities, provides accessible service in 62 cities and towns.

Bus fleet

The bus fleet consists of 978 active diesel buses (of six major classifications), 4 "prototype" alternative fueled buses and 40 trackless trolley vehicles. The 40' diesel coaches have a useful life of 15 years, and the trackless trolleys have a useful life of 20 years. Major procurement efforts over the next few years will transition these vehicles to lower emissions technologies. In addition, 426 RIDE vehicles are maintained under the bus program.

- **1999 Future Bus Prototype**

To determine the most appropriate technology for future bus purchases, the Authority has undertaken a future bus pilot program. In the summer of 1999, the MBTA accepted the delivery of two (2) compressed natural gas (CNG) and two diesel electric hybrid buses. Both bus types are 40 feet in length. The prototype program will enable a decision on which bus propulsion technology will be made.

- **1995 Nova RTS**

The newest and most recent acquisition of the MBTA, are equipped with wheelchair lifts and air conditioning.

- **1994 TMC RTS**

This series is comprised of 249 coaches, which are equipped with both wheelchair lifts and air conditioning.

- **1989 TMC RTS**

This second series is comprised of 200 coaches. Within this series, 30 coaches are 35 feet long, the only non-40 foot length buses in the bus fleet. The fleet is equipped with wheelchair lifts and air conditioning. These vehicles were rebuilt in 1996.

- **1985-1987 GMC RTS**

This fleet is made up of 380 coaches. These buses were delivered in three distinct phases: 200 in 1985, 90 in 1986, and 90 in 1987. These 40-foot coaches had full mid-life rebuilds in 1994 and 1996.

- **Trackless Trolleys**

The trackless trolley fleet includes 40 electric trolley buses (1976). The trackless trolleys have attained their service life expectancy and are in the process of being replaced. Service life for the new trackless trolleys remains to be confirmed; however, it is expected to approximate 20 years.

- **The "RIDE"**

The RIDE fleet consists of 426 cars and vans that have a normal life of 5 years. The MBTA owns 265 sedans and vans and the remaining 161 vehicles are supplied by four different contractors. The Authority is moving toward a contracting program for these vehicles. The current fleet is not being replaced as vehicles attain their service life.

The MBTA's maintenance strategy for the bus program is ongoing with continuous, frequent preventive maintenance inspections along with complete repairs of all defects using new parts. Part replacement is on a programmed schedule to prevent complete component failure. Power train overhauls are completed every 250-300 thousand miles. This effort maximizes vehicle and component utilization by employing advanced preventative maintenance practices. With this program in place, there are no major mid-life rebuild/overhaul projects planned for the future.

The current plan programs $242.5 million toward bus vehicles. This total represents 35.9% of total expenditures in the revenue vehicle program. The majority of the bus program spending is for the procurement of 341 alternative fueled buses as a replacement fleet for the 1985 - 87 bus series and a portion of the 1989 bus series. The purchase of 17 additional alternative fueled buses (for a total of 358 new, alternative fueled buses) is funded on page 11 of this document. The Authority is also in the process of procuring a new replacement fleet of trackless trolleys.

FUNDED PROJECTS: FY03 – FY07

There are 10 approved projects. Four involve the procurement of replacement vehicles, two of which will have a positive impact on the operating budget. The remaining project involves the evaluation of future vehicle technologies and will have a neutral impact on the operating budget.

Bus Fleet Development:
Induction Bus

This proposal would develop 4 prototype buses using a new technology, known as the Roadway Powered Electric Transit Bus Demonstration Project. This effort will aid the Authority in determining the best bus technology for the future.

Bus Fleet Purchases:
Procurement of Rapid Transit Buses

This project involves the procurement of 27 60' articulated CNG rapid transit buses to replace a portion of the retiring 1985-87 RTS buses. This effort will allow the Authority to offer higher quality service on high ridership bus routes, using lower emission vehicles. This project will have a negative impact on the Authority's operating budget due to fuel costs.

Bus Fleet Replacement (1985-87, 1989 Buses) – Phases I

This effort involves the purchase of 314 CNG fueled buses to replace 280 1985-1987 RTS buses and 34 1989 RTS buses. The technology of these vehicles was determined by the Bus Technology project described above. This project will have a negative impact on the Authority's operating budget due to fuel costs.

Bus Fleet Replacement (1989 Buses) – Phase II

This effort involves the purchase of 175 replacement buses primarily intended to replace and retire the balance of the 1989 RTS buses. This project could have a negative impact on the Authority's operating budget due to fuel costs.

Existing Bus Fleet Investments:
These projects represent a commitment by the MBTA to its #1 strategic priority: improving bus service. Through these efforts, the Authority will reinvest in its existing bus fleet to improve service reliability and passenger comfort.

"Zero" Series Engine and Transmission Rebuild
This effort will rebuild the engines of up to 400 of the MBTA's "zero" series buses. This re-build work will last the remainder of the expected life of the bus.

Air Conditioning Retrofit
This project will provide for the procurement and installation of air conditioners for the 400 "zero" series buses. The replacement will include the compressor, fans, coils, the evaporator, the condenser and the blower. Each unit will come with a two-year manufacturer warranty. The replacement of these units is intended to ensure the reliability of the air conditioning throughout the remainder useful life of the buses.

Bus Floor and Body Program
This purpose of this project is to provide bodywork for 400 buses. The scope includes sanding and filling imperfections, masking, priming and painting and the application of a clear coat for protection. In addition, floors and bodies of these buses will be repaired to enhance safety and reliability. This work is anticipated to last the life of the bus.

Transmission Rebuild Program
This project will rebuild the transmissions for MBTA buses. The overhaul includes disassembly, cleaning, inspection and rebuilding of individual components, reassembly, inspection and installation of the transmissions for this series of buses.

Software Enhancements and Technology
This effort purchases new maintenance software for the MBTA's 10 bus garages. The software will facilitate the diagnosis and repair of the nearly 400 new buses and trolleys with new technologies.

Trackless Trolleys
The project involves the procurement of 28 trackless trolleys to replace the existing fleet. The new fleet will incorporate new technology, along with low-floor design to accommodate all riders and smart-bus features.

Revenue Vehicles—Bus: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Induction Bus	$3.68	$3.56	$0.12	$0.00	$0.00	$0.00	$0.00	$0.12	$0.00
Bus Rapid Transit Proc	$19.70	$0.00	$8.48	$9.21	$2.01	$0.00	$0.00	$19.70	$0.00
Bus Fleet Repl. - Ph. 1&2	$117.25	$7.25	$6.93	$99.02	$4.04	$0.00	$0.00	$109.99	$0.00
Bus Fleet Repl. - Ph. 3	$65.10	$0.00	$0.00	$0.00	$0.50	$32.00	$32.60	$65.10	$0.00
Bus Fleet Reinvestment	$32.55	$8.45	$14.00	$10.10	$0.00	$0.00	$0.00	$24.10	$0.00
Trackless Trolleys	$30.70	$7.24	$7.74	$14.47	$1.25	$0.00	$0.00	$23.46	$0.00
Total Program	**$268.98**	**$26.50**	**$37.26**	**$132.80**	**$7.80**	**$32.00**	**$32.60**	**$242.46**	**$0.00**

ANTICIPATED FUTURE NEEDS

The MBTA is programming bus vehicle acquisition so that a smaller number will be delivered at regular intervals (50 to 100 coaches every two years). With an average fleet age of nine years and 20% of the existing fleet within 18 months of eligible retirement, near term acquisition forecasts will exceed this goal but should level off in later years. This strategy will reduce mechanical dependency on a single class of vehicles.

1994 RTS Fleet Replacement

The procurement of new buses is anticipated after the conclusion of this six-year program for the retirement of 249 40' 1994 RTS buses.

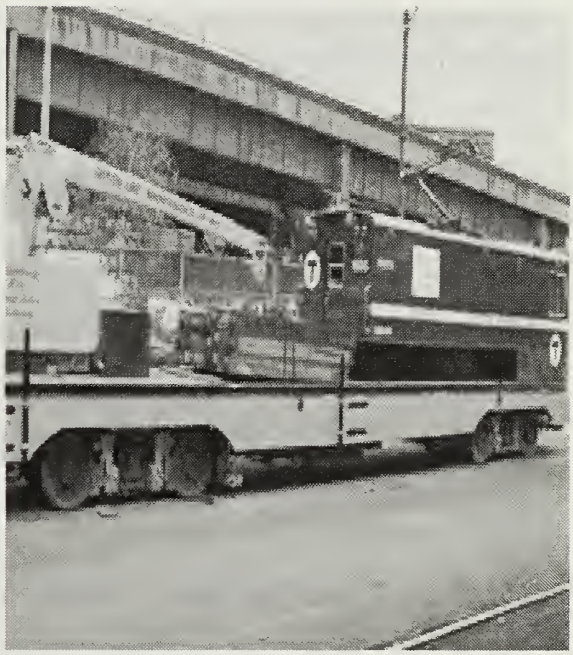
1995 Nova Fleet Replacement

The procurement of new buses is anticipated after the conclusion of this six-year program for the retirement of 149 40' 1995 Nova RTS buses.

PROGRAM OVERVIEW

Non-revenue equipment includes both non-revenue vehicles and work equipment.

Systemwide non-revenue vehicles support the entire range of Authority operations. Included in this category are a wide array of rubber-tired vehicles that are used for maintenance, safety, field supervision and revenue collection. The MBTA owns and maintains 858 non-revenue vehicles, including 479 vehicles to support subway and bus operations, 115 police vehicles, 219 vehicles to support commuter rail and an additional 45 specialty vehicles such as fork trucks, sweepers, trailers, generator or pumps. Non-revenue vehicles have a service life of approximately 10 years.



Non-revenue vehicles used to maintain commuter rail rights-of-way include rail-mounted or on-track machines such as track geometry cars, flat cars, cranes, tampers, ballast regulators, ballast cars, tie handlers, and brush cutters.

The Authority also maintains non-revenue equipment. These include brush cutters, loaders, pumps, tractors, air compressors, and other equipment. Included in the maintenance of way category are crane, bucket, cable, platform and snow fighting trucks. Rubber-tire construction equipment includes front-end loaders, backhoes, and cranes. Non-revenue equipment has a service life of approximately 10 years.

The Authority devotes $1.50 million for non-revenue equipment, which represents 0.1% of the total capital program.

NON-REVENUE EQUIPMENT
SUBWAY

Non-revenue vehicles used to maintain the MBTA's subway and light rail rights-of-way include rail-mounted (or on-track) machines such as track geometry cars, dump cars, wire cars, flat cars, cranes, tampers, box cars, ballast cars, and clearance cars. They have various service lives, ranging from 4 years to 15 years.

- **Rapid Transit Work Cars**

There are 17 assorted rapid transit work cars: box cars, clearance cars, cranes, flat cars, and wire cars. These cars range in useful life from 20 to 40 years.

- **Snow Plow Cars**

The Authority has 7 snowplows ranging from 2 to 12 years of age. They are located at the Reservoir, Riverside, and Mattapan yards. Snowplow cars have a useful life of 30 years.

Other specialty vehicles include a GLP (generator, lift, and pump) car, an Emergency Response vehicle, and a Maintenance of Way (MOW) car. These items generally have 20-year service lives.

FUNDED PROJECTS: FY03 – FY07

There are no funded projects for the subway non-revenue equipment program. Procurement for a Green Line Emergency Response Vehicle is funded under the Subway Revenue Vehicle section of this plan.

ANTICIPATED FUTURE NEEDS

The ability of the Authority to perform maintenance, respond to service problems and react to safety issues is critical, and the condition of the fleet that supports these activities is a major consideration. The current fleet is comprised of some vehicles that have attained their service lives and are due to be replaced.

Subway Non-Revenue Vehicle Needs

Four snowplows are anticipated for the Green Line, among other subway non-revenue vehicle needs.

NON-REVENUE EQUIPMENT
COMMUTER RAIL

Non-revenue vehicles used to maintain commuter rail rights-of-way include rail-mounted (or on-track machines) such as track geometry cars, flat cars, cranes, tampers, ballast regulators, ballast cars, tie handlers, and brush cutters. They have various service lives, ranging from 4 years to 15 years.

FUNDED PROJECTS: FY03 – FY07

There are no capital projects for the commuter rail non-revenue equipment program.

ANTICIPATED FUTURE NEEDS

The ability of the Authority to perform maintenance, respond to service problems and react to safety issues is critical, and the condition of the fleet that supports those activities is a major consideration. The current fleet is comprised of some vehicles that have attained their service lives and are due to be replaced.

Commuter Rail Non-Revenue Vehicle Needs

The replacement of six aging K cars and light trucks used by MBTA staff in the inspection of Amtrak maintenance efforts is anticipated. The replacement of approximately 45 maintenance of way (MOW) work vehicles will also need to be scheduled.

Replacement of M/W Work Equipment

Replacement of Maintenance of Way work equipment that has reached the end of or exceeded its useful life is anticipated. This equipment includes tie replacement, snow removal, brush cutting, track geometry inspection, excavating and other maintenance support equipment.

NON-REVENUE EQUIPMENT
SYSTEMWIDE

Systemwide non-revenue equipment includes equipment used to systemwide property and assets throughout the Authority. The ability of the Authority to perform maintenance, respond to service problems and react to safety issues is critical, and the condition of the fleet that supports these activities is a major consideration. There is $1.5 million devoted toward systemwide non-revenue equipment.

FUNDED PROJECTS: FY03 – FY07

There are two projects for systemwide non-revenue equipment. Both will have a neutral impact on the operating costs.

Systemwide Non-Revenue Equipment Procurement

Maintenance of Way Work Equipment Purchase

This effort would replace work equipment, which has reached the end of, or exceeded, its useful life. This equipment includes tie replacement, snow removal, brush cutting, track geometry inspection, excavating and other maintenance support equipment.

Signals and Communications Signal Crew Equipment

The project involves the procurement of non-revenue equipment to replace aging vehicles within the signal division.

Non-Revenue Equipment—Systemwide: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Non-Revenue Equipment	$2.65	$1.15	$1.50	$0.00	$0.00	$0.00	$0.00	$1.50	$0.00
Total Program	**$2.65**	**$1.15**	**$1.50**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$1.50**	**$0.00**

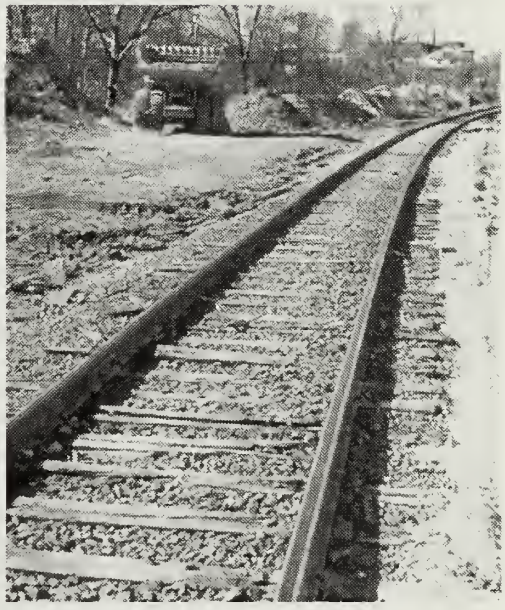
ANTICIPATED FUTURE NEEDS

Systematic replacement of older equipment along with a regular maintenance program is required to keep the fleet in a state of good repair. If this equipment is not functioning, track and right-of-ways will be adversely affected. The project listed below has been identified as an anticipated future needs for systemwide non-revenue equipment.

Systemwide Non-Revenue Vehicle Needs

A fleet plan will be developed to prioritize the remaining need to replace aging non-revenue vehicles.

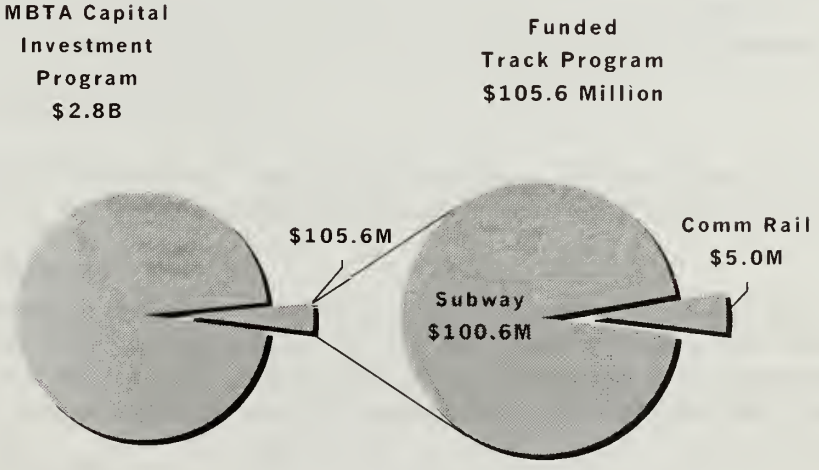
PROGRAM OVERVIEW



The MBTA currently operates light and heavy rail transit over 185 miles of track. The commuter rail system is operated over 600 miles of track. On each rail line, replacement efforts are programmed for different segments based upon geographical location or type of track construction.

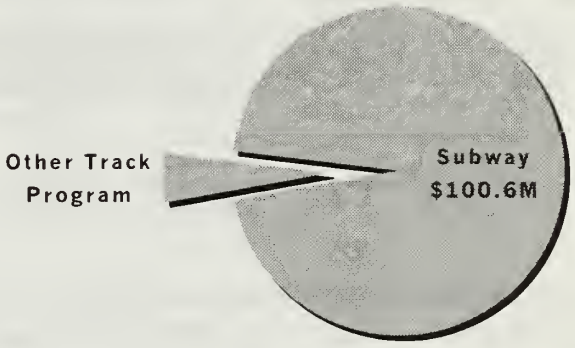
The right-of-way generally consists of track, ballast, and concrete or timber ties. Track has a useful life of 25 years. Grade crossings have special maintenance and replacement needs, and are typically replaced as part of a stand-alone program.

The current program devotes $105.6 million towards track/r.o.w. The track/r.o.w program represents 3.8% of the total capital investment program. Major projects include the replacement of concrete ties on the Red Line and a systemwide track maintenance effort.



TRACK/R.O.W.
SUBWAY

The MBTA subway system operates on 185 miles of track, including 125 miles of revenue track and an additional 60 miles of non-revenue track within yards and other service areas.



- The Red Line operates over 45 miles of revenue track. Types of track construction include timber tie track, concrete dual block tie track, direct fixation, and concrete floating slab track. The entire line is powered by third rail.

- The Orange Line operates over 22 miles of revenue track. The type of track construction consists of timber tie track, direct fixation, and concrete floating slab track. The entire line is powered by third rail.

- The Blue Line operates over 12 miles of revenue track. It is primary track type of construction is timber tie; however, sections of the track are monoblock concrete tie track. The line is powered by third rail and overhead catenary lines.

- The Green Line (Light Rail) has a total of 46 revenue track miles. Although the track type varies throughout the Green Line, the majority of the line is wood tie and ballast units with some monoblock concrete tie track as well. The running rail on the line consists of both "T" rail and girder guardrail. The entire line is powered by overhead catenary.

Subway grade crossings have a useful life ranging from 12 to 15 years. There are 64 grade crossings along the Green Line and other crossings within MBTA yards. The subway fleets operate over 1 million feet of mainline-ballasted track and over 400,000 feet of yard-ballasted track. The MBTA has approximately 560 mainline turnouts (including equipment), which have useful lives ranging from 4 to 25 years. There are 675 total yard turnouts and equipment, which have useful lives ranging from 8 to 25 years.

The current program devotes $100.6 million toward subway track/r.o.w. This total represents 95.3% of track/r.o.w expenditures. The majority of the funding is programmed for systemwide work throughout the rapid transit system.

FUNDED PROJECTS: FY03 – FY07

There are 3 projects occurring in the subway track/r.o.w. program as part of the current plan. Three projects will replace and improve track along the Green Line, and the other project involves track work that will occur throughout the subway track program. Both projects will have positive impacts on the operating budget. Failure to complete these projects as proposed will have a negative impact on the Authority's operating budget.

Green Line Track Upgrade
This project will continue track improvement efforts on the Riverside "D" Line and will result in improved quality ride and more reliable service for our customers.

Green Line Grade Crossing Reconstruction
The project will rebuild 7 Green Line grade crossings on the B-line: 2 on Beacon St. and 5 on Commonwealth Ave. This will provide an improved ride and reliable service for MBTA riders.

FY00-12 Track Maintenance Program
This project represents funding that has been set aside to address on-going subway track infrastructure needs.

Track/R.O.W.—Subway: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
GL-Track Upgrade	$1.00	$0.85	$0.15	$0.00	$0.00	$0.00	$0.00	$0.15	$0.00
GL-Grade Crossing Pgm	$12.10	$7.43	$4.00	$0.67	$0.00	$0.00	$0.00	$4.67	$0.00
FY00-12 Track Maint.	$366.06	$37.35	$20.92	$17.36	$18.27	$19.18	$20.09	$95.80	$232.91
Total Program	**$379.16**	**$45.63**	**$25.07**	**$18.03**	**$18.27**	**$19.18**	**$20.09**	**$100.62**	**$232.91**

ANTICIPATED FUTURE NEEDS

There are maintenance issues that apply to several or all of the rapid transit and light rail lines. Performing periodic renewal and replacement efforts in a timely manner reduces daily operating costs, reduces life cycle costs and increases reliability and safety. A continual rail-changing and tie-renewal program is needed to keep the track structure in a state of good repair. The following projects have been identified as future track needs.

Track Design Standards
This project would develop track design standards in the form of a book of standard plans and specifications.

Green Line Grade Crossing Reconstruction
There are 40 Green Line grade crossings that will be rebuilt over the next 10 years.

Blue Line Rail Changing
A rail-changing program is anticipated in order to replace worn rail and existing bolted rail with new 115-pound rail from Bowdoin to Maverick; in addition, the existing 85-pound rail from Maverick to Airport will be replaced with new 115-pound rail and vertical guardrail.

Red Line Columbia Junction Interlocking
The project involves the replacement of crossties and the relocation of some switches for upgrading.

Green Line Tie Renewal Program
A tie renewal program to install new wood ties is anticipated along the B, C, and D lines.

Blue Line Tie Renewal Airport-Wonderland
A wood tie replacement program for 21,000 ties is anticipated from Airport to Wonderland.

Orange Line Tie Replacement
A tie renewal program is anticipated from Haymarket to Oak Grove that would install 50,000 new wood ties.

Red Line Surface Tamper/Mainline Thermite Weld/CWR
The project involves the surfacing and tamping of track, in addition to thermite welding of the rail to improve the ride quality.

Orange Line Third Rail Upgrade
This program will replace third rail concrete support pedestals with 4,000 treated wood blocks. A program to replace approximately 2,000 feet of third rail in the station areas is also anticipated.

Green Line Track Rehabilitation
Track replacement programs are anticipated of areas between Brookline Village and Reservoir, and along the C-Line. Also, a rebuild of track structure within 50 feet of all platforms and grade crossings is included.

Blue Line Special Trackwork
This is a special trackwork renewal program to replace all turnouts.

Red Line Fully Guarded Switches
This project involves the deactivation of the switches that do not meet track standards.

Blue Line Orient Heights Track Rebuild
The project involves the rebuilding of the track in the Orient Heights yard.

Orange Line Special Track Work: Rebuild Wellington
Programs to rebuild track structures and replace yard turnouts in Wellington Yard are anticipated.

Red Line Floating Slab Alignment Repair
This project would the rebuild floating slab track from Harvard to Alewife to replace sectors of track that age more quickly than anticipated.

Red Line Ashmont Line Rail Program
A program to replace old 150-lb third rail with new 85-lb third rail is anticipated for the Ashmont and Braintree line.

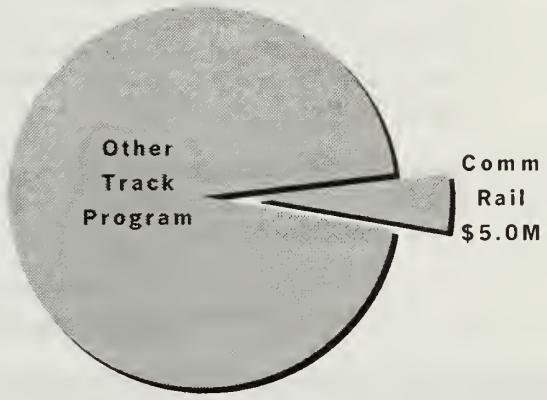
Red Line Clayton Street Curve Reconstruction
The project involves the reconstruction of this section of track so speed restrictions may be lifted.

Subway De-watering Pump Replacement
This project involves the replacement of existing subway right-of-way and de-watering pumps at South Cove, Columbia Junction, and Medford Underpass.

Systemwide Track Charts
This effort would create track charts for the remaining lines so that the MBTA will have systemwide track charts.

TRACK/R.O.W.
COMMUTER RAIL

Funded Track Program = $105.6 Million



Commuter rail right-of-way consists of rail, wooden ties, railroad crossties, grade crossings, and fencing. The commuter rail system is divided into eleven major operating lines.

<u>North Side—North Station Terminal</u>

- The Fitchburg line operates over 90 miles of track
- The Lowell line operates over 50 miles of track
- The Haverhill line operates over 55 miles of track
- The Newburyport/Rockport line operates over 92 miles of track

<u>South Side—South Station Terminal</u>

- The Worcester line operates over 89 miles of track
- The Needham line operates over 13 miles of track
- The Franklin line operates over 34 miles of track
- The Attleboro/Stoughton line operates over 116 miles of track
- The Fairmont line operates over 19 miles of track
- The Middleborough/Lakeville line operates over approximately 47 miles of track
- The Plymouth/Kingston line operates over approximately 32 miles of track

Rail in the commuter rail system can be expected to last approximately 40 years, although curve rail has a shorter life span. The system contains over 1,300 miles of rail.

There are approximately 1.5 million timber crossties and switch timber supporting the commuter rail system. Railroad crossties are renewed on a cyclical schedule that ensures failed ties do not impose speed restrictions that result in train delays. Railroad crossties usually have a life span of 25 to 30 years depending on a variety of mechanical and biological factors. They also require a renewal of approximately 48,000 cross ties and 5,000 switch timbers annually.

Grade crossings are the most prominent fixtures of the commuter rail system. The Authority has 257 grade crossings on the commuter rail system, requiring a replacement program averaging 21 crossings per year. They provide comfort and safety for both commuter rail passengers and highway motorists. Grade crossings have a life expectancy of 12 years. The automatic protection equipment is maintained under the signal program.

The MBTA has programmed $5.0 million towards the commuter rail track/r.o.w., which represents 4.7% of the total track program investments. In addition, a significant amount of commuter rail track maintenance is performed under a commuter rail management contract and is primarily funded through the operating budget.

FUNDED PROJECTS: FY03 – FY07

There are 2 commuter rail track efforts. Both will have a positive impact on the operating budget due to more efficient operation.

Fort Point Channel Bridge – Fourth Track
This construction effort will provide fourth track over the Fort Point Channel Bridge. Work will include the installation of 100 feet of additional track, the relocation and installation of an existing double slip switch and the installation of additional signals associated with the revised construction plan. This will assist Railroad Operations in managing the increase in South Station traffic.

Commuter Rail Systemwide Replacement
This effort will fund the replacement of rail on an as-needed basis throughout the commuter rail system to maintain service reliability and safety.

Track—Commuter Rail: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Ft. Point Channel 4th Track	$0.05	$0.00	$0.05	$0.00	$0.00	$0.00	$0.00	$0.05	$0.00
Commuter Rail Track Repl.	$4.90	$0.00	$1.45	$1.45	$1.50	$0.50	$0.00	$4.90	$0.00
Total Program	**$4.95**	**$0.00**	**$1.50**	**$1.45**	**$1.50**	**$0.50**	**$0.00**	**$4.95**	**$0.00**

ANTICIPATED FUTURE NEEDS

Tracks for the 11 commuter rail lines throughout the system are in varying conditions. Four lines are in fair to acceptable condition, four are in good condition, and three are new and in excellent condition. Systemwide, there are maintenance issues which apply to several or all of the rail lines. Performing periodic renewal and replacement programs in a timely manner reduces daily operating costs, reduces life cycle costs and increases reliability and safety. The MBTA has identified the following projects as future needs for commuter rail track.

Lowell Junction/Frey Double Track
This project would double track the West Route between Lowell Junction and Frey to reduce delays and improve the flexibility of scheduling both passenger and freight trains.

Winchester-Mishawum Rail Replacement
This effort will replace 5.6 miles of 112-pound and 115-pound rail on track between Winchester and Mishawum.

Fitchburg Main Line Rail Replacement
This project involves the replacement of 18.4 miles of 112-pound, non-control-cooled rail on the Fitchburg Main Line between Willows and Fitchburg.

Rail Inventory Purchase
The project is the purchase of 10,000 feet of head-hardened 132-pound rail to replenish inventory and replace worn out railing.

Elimination of Bleachery Interlocking
This project encompasses the relocation of Guilford's train operations from Lowell to Lawrence, he removal of crossovers between MBTA's New Hampshire Main Line operations and Guilford's Lowell Branch, and the relocation of one crossover and removal of four crossovers.

South Acton Station Double Track
This project would extend the double track portion of the Fitchburg Main line west through the station at South Acton. The extension of the double track would allow trains turning at South Acton to be held clear of passing trains, and subsequently reduce delays.

Reading Station Double Track
This project would extend the West Route double track north through Reading Station. The extension would allow trains turning at Reading to be held clear of passing trains, thus reducing delays and freight conflicts.

Beverly Drawbridge: Upgrade Mechanical Devices
This project involves the following: removing and replacing all outdated and worn gears and parts; redesigning the push/pull rod system and wedge mechanisms for greater reliability and durability; and updating bearings and anticillary equipment.

Three Stations (Salem, Manchester, Gloucester) Upgrade Approach
This project involves the installation of approach tie pads at Conley expansion joints at Saugus, Manchester, and Gloucester drawbridges.

Systemwide Commuter Rail Fencing
The installation and maintenance of right-of-way is important to the safe operation of trains, the protection of railroad property, and the prevention of trespassing and illegal dumping of trash and contaminated materials on railroad property.

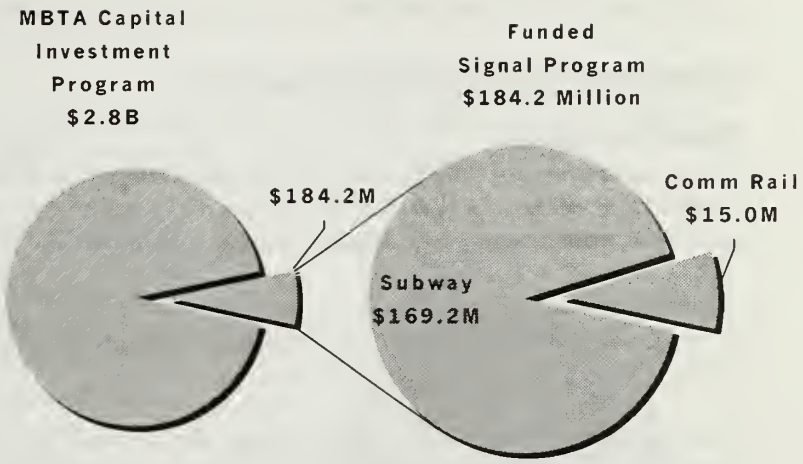
Montvale Yard Rehabilitation
This project will provide for the rehabilitation and upgrade of the entire Montvale Yard on the New Hampshire main line.

Future Systemwide Tie Replacement Program
The project involves the systemwide replacement of defective ties.

Systemwide Tie Renewal Program
Tie renewal programs will enable reliable and continual commuter rail usage.

Systemwide Grade Crossing Renewal
This project will provide funds for the renewal of grade crossings on the commuter rail system.

PROGRAM OVERVIEW



Train control is an integral part of an operating transit system. The signal system's primary goal is maintaining train separation while attempting to minimize headways and runtimes. In order to maintain proper train separation principles for route integrity, speed control and broken rail protection are employed in the design. These signal system aspects are thoroughly tested as part of the installation process and require ongoing maintenance. The MBTA utilizes two basic types of signal philosophies: Absolute Block Signaling (ABS) and Automatic Train Control (ATC). The ABS system uses AC circuits. On the Blue Line, train separation is maintained by the use of trip stops while on the Green Line, the operator has sole responsibility for adhering to signal aspects. The ATC system uses audio frequency track circuits. This allows the transmission of the maximum allowed speed to an intelligent carboune subsystem. Maximum allowed speed is determined by civil restrictions as well as track conditions and is enforced by the wayside signal system in conjunction with the carboune subsystem.

The baseline for signal systems is the use of vital relays that operate in a "fail-safe" mode. This equipment is housed in Central Instrument Rooms/Houses (CIR/H) and wayside cases or bungalows. These control systems house relays, fuses, transformers, rectifiers and resistors, as well as switches, signals, track circuits, heaters, train stops, and train approach lights.

Signal Systems Components (Shared by Commuter Rail and Subway)

Switches, Crossovers, and Switch Heaters
Switches and crossovers are incorporated in the track system to reroute trains. Both electric and hand throw switches are used. Switch heaters are used to keep switches functioning during the winter months. Switches, crossovers, and switch heaters typically have a 5-year useful life.

Signals/Wayside Lights
Wayside lights display a combination of signal aspects to communicate the status of the next track segment to the train operator. They typically have a useful life of 2 years.

Track Circuits
The track circuit is the most vital part of the signal system and consists of a power source, a transformer or transmitter circuit and a receiver or relay end. AC track circuits are used on the Blue and Green lines as well as on all interlocking areas. Audio frequency track circuits, made up of a transmitter and receiver end, are used on the Red and Orange Lines. They have a 20-year useful life.

Grade Crossing Signals
Grade crossing signals are used on the commuter rail network to warn automobile and pedestrian traffic of oncoming trains. They have a useful life of 20 years.

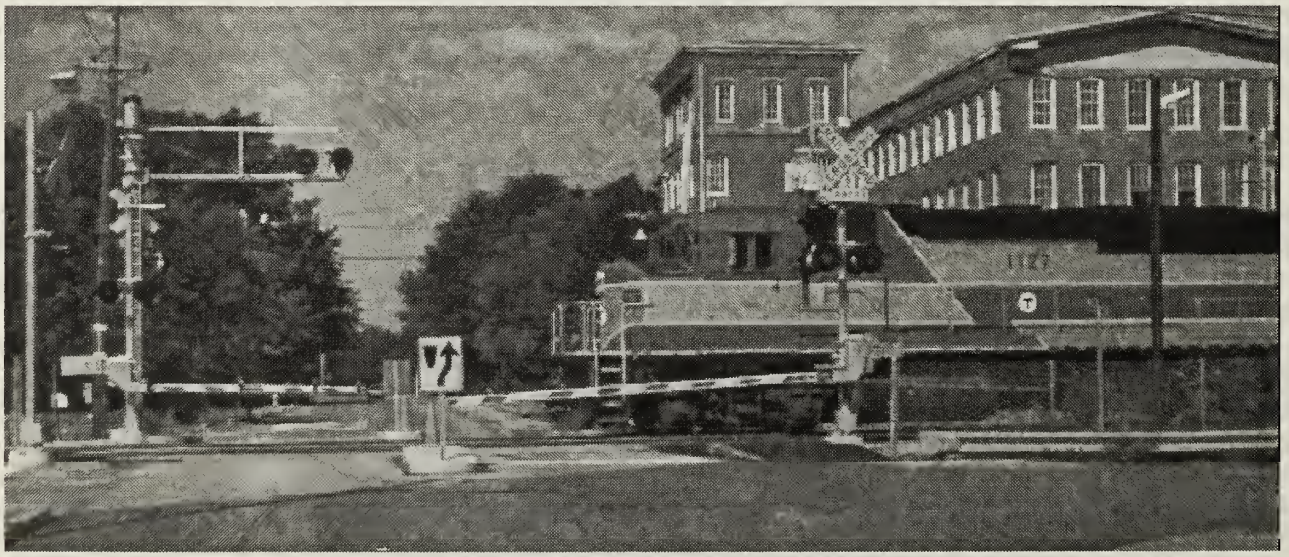
Train Stops and Train Stop Heaters
Train stops are utilized on the rapid transit lines to ensure compliance with restrictive indications and have a useful life of 20 years. Heaters keep the train stops functioning in the winter. They usually have a useful life of 5 years.

Signal System Components (Subway Only)

Third Rail Heaters
Third rail heaters are used to keep the rails from icing over during winter months. The Authority utilizes over 540,000 feet of third rail heaters. All third rail heaters have a useful life of 5 years. In addition, there are 43,990 third rail heater insulators, which have a typically have a useful life of 5 years.

Train Approach Lights (TAK)
Train Approach Lights (TAK) are utilized on the rapid transit as a safety indicator for operations people on the right-of-way. They have a useful life of 20 years.

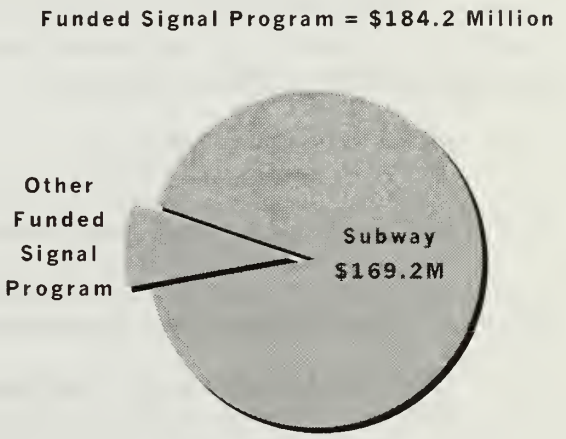
The current program devotes $184.2 million toward signals. The signal program represents 6.5% of the total capital investment program. Two major efforts include the replacement of north segment of the Orange Line signal system and the introduction of cab signaling on the Worcester Line.



SIGNALS
SUBWAY

The Authority's subway signal program consists of two types of control systems (ATC and ABS) varying by line. The Red and Orange Lines use an Automatic Train Control (ATC) system while the Blue and Green Lines utilize an Absolute Block Signal (ABS) type system. Each line consists of mainline and yard segments.

- The Red Line signal system consists of several yard and mainline segments. It is an ATC system, which means it uses vehicle systems and wayside controls to regulate train movement. There are a total of 135 switches, 210 signals, 355 track circuits, 1,632 third rail heaters, 68 switch heaters, 2 train stops heaters, 2 train stops, 12 train approach lights, and 16 instrument houses. Currently, the Authority is in the process of replacing generation one-track in Central Square, Downtown Crossing, JFK/UMASS, Ashmont, North Quincy, Quincy Center and South Shore. The significant number of third rail heaters is due to a large segment of the line that is above ground and exposed to the elements.



- The Orange Line utilizes a combination of ATC and wayside block signal systems. It has a total of 107 switches, 199 signals, 245 track circuits, 457 third rail heaters, 101 switch heaters, 34 train stop heaters, 17 train stops, 48 train approach lights, and 12 instrument houses. The signal system, from Chinatown to Oak Grove, is about 25 years of age and is currently programmed for replacement.

- The Blue Line has a total of 86 switches, 154 signals, 181 track circuits, 12 third rail heaters, 43 switch heaters, 145 trip stop trips each with two heaters, 145 train stops, 74 train approach lights and 6 instrument houses. At the completion of the Airport and Aquarium stations, there will be 2 additional instrument houses. The Blue Line is equipped with ABS with train stops, and it does not utilize on-board subsystems for train movement.

- The Green Line signal system is the oldest signal system in the United States, portions of which exceed the industry standards for useful life. It is equipped with the ABS signal system, but without train stops. It has a total of 91 switches, 497 signals, 497 track circuits and 40 switch heaters. Portions have been upgraded following the flood of 1996, including Brookline Village to Hynes Auditorium. Haymarket to North Station is being upgraded as part of the North Station reconstruction.

The OCC equipment, bungalows/central instrument locations, wayside systems, and yards systems are universal along the subway system. Each has a useful life of 25 years, with the exception on the OCC. The useful life of the OCC is based on availability of spare parts for computers, which have a life cycle of 5 years.

The current program devotes $169.2 million toward subway signals. This effort represents 91.9% of the total signal program. The upgrade of the Orange Line signal system is the most significant effort underway in the subway signal program. Other major projects include the upgrade of the Blue Line signal system (a portion of the Blue Line modernization effort) and a systemwide signal infrastructure improvement effort.

FUNDED PROJECTS: FY03 – FY07

Currently, there are 6 funded projects under subway signals. All signal projects listed below will have a positive effect on the Authority's operating budget by reducing the meantime between functional failure (MTBFF). With newer systems, equipment, and redundancy the mean time to repair a failure will be substantially reduced. By keeping the number of failures and time to make repairs low, overtime to facilitate revenue service will be minimized. These benefits are somewhat offset by deferred replacements on the oldest portions of the signal systems, with the potential for outages increasing over time.

FEMA Flood Remediation
This project involves the final stages of work repairing damages incurred by the flood of 1996.

Red Line Signal Upgrade/Cable Modifications
The purpose of this project is to replace existing Generation One Track Modules and associated hardware and wiring on the Authority's Red Line. Generation Five Track Modules are presently being installed on the Red Line at 6 locations. This effort will result in more reliable and efficient service.

Green Line Lechmere Station Signalization
This effort will provide signalization at the proposed Lechmere station.

Blue Line Signal Upgrade
The scope of this work will involve the study and upgrade of the signal system along the Blue Line in order to accommodate six-car train service in 2004. This will be performed in conjunction with the Blue Line Modernization effort.

Orange Line Signal System Upgrade
The purpose of this project is to design and install a state of-the-art Automated Train Operating (ATO) system on the Orange Line from Chinatown to Oak Grove with interfaces at Wellington Yard and Chinatown. The new ATO system would be compatible with the existing ATO system on the Southwest Corridor and the Orange Line fleet's Automatic Speed Control (ASC). In addition, a new communications link to the OCC will be built.

FY00-FY12 Signal Maintenance Program
This project represents funding that has been set aside to address subway signal infrastructure needs.

Signals—Subway: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
FEMA Flood Remediation	$42.27	$36.95	$2.50	$2.32	$0.50	$0.00	$0.00	$5.32	$0.00
RL-Signal Upg/Cable Mod	$5.37	$3.36	$0.67	$1.25	$0.09	$0.00	$0.00	$2.01	$0.00
GL-Lechmere Signalization	$8.90	$0.00	$0.00	$0.00	$0.00	$3.50	$3.50	$7.00	$1.90
BL Mod-Signal Upg	$30.00	$0.27	$3.98	$22.21	$3.54	$0.00	$0.00	$29.73	$0.00
OL-Signal Upg	$89.20	$7.65	$14.95	$14.32	$15.22	$16.06	$13.00	$73.55	$8.00
FY00-12 Signal Maint.	$197.11	$20.11	$11.27	$9.35	$9.84	$10.33	$10.82	$51.59	$125.41
Total Program	**$372.84**	**$68.34**	**$33.37**	**$49.44**	**$29.18**	**$29.88**	**$27.31**	**$169.19**	**$135.31**

ANTICIPATED FUTURE NEEDS

Regular maintenance for all signaling components is needed to maintain safety and reduce operational breakdowns. New signaling technology should also be considered to improve safety and operations, as well as to decrease maintenance costs. The following projects have been identified as future subway signal needs.

Red Line Signaling Standardization
Long-term issues include signaling standardization using Generation Five Track Modules.

Red Line JFK/UMASS/North Quincy
This project would consolidate the cable plant and signal houses at JFK, UMass, and North Quincy stations.

Evaluation of Future Technology Study
The Signal Division is considering the use of Communication Based Train Control (CBTC) for both the Green and Blue Lines.

Green Line Systemwide Signal Improvements
The overall condition of signal equipment including interlocking logic, track circuits signaling and switch heater controls will be addressed incrementally. Specific technologies to be used would be identified through the study above.

Third Rail Heater Central Control
This project involves the design and implementation of a systemwide third rail heater control system to provide automated shut-on/off from OCC.

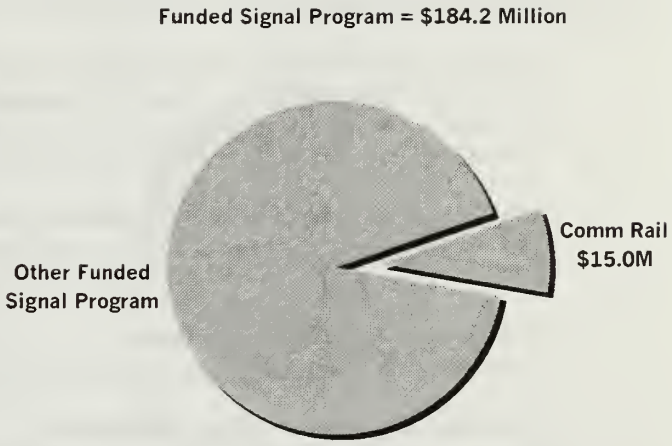
Systemwide Cable Replacement
Cable replacement is anticipated for cable that has sustained premature wear caused by local conditions.

Guilford Yard Signal Installation
This project will consist of the installation of signals at the new Guilford Yard.

North Station/Lechmere Stations Signal Upgrades
This effort will consist of an upgrade of the signal systems between North Station and Lechmere.

SIGNALS
COMMUTER RAIL

The Authority's commuter rail signal system consists of over 480 miles of signalized track, 190 miles of aerial pole line, 80 interlockings, 10 train control machines, over 1000 signal head, 476 electric switches and 200 grade crossings with automatic protection equipment. There are 35 bungalows and 52 bungalow/houses in the commuter rail signal system. They all have a useful life of 25 years. Two systemwide signal units are the wayside system and the OCC signal equipment. Both systems have a 25-year useful life.



Annual replacement of under ground signal cable, aerial signal cable, electric switch machines and electric grade crossing mechanisms is required to assure safe reliable signal system within an effective life cycle cost.

The MBTA has devoted $15.0 million towards commuter rail signals in the current program, which is 8.1% of the total signal effort. Signal maintenance is performed under the commuter rail management contract and is primarily funded by the operating budget.

FUNDED PROJECTS: FY03 – FY07

There are two projects for the commuter rail signal program. These projects will have a neutral impact on the operating budget.

Commuter Rail Signal Upgrades:

Worcester Line Upgrade (Cab signaling)

This project provides an upgrade to the signal system on the Worcester Line. Cab Signals will be added, reducing signal delays and providing added operational safety. In addition, two new interlockings and a crossover will be added, providing greater flexibility for train operations. The upgrade will enhance the system's functionality.

West Route Main Line Signal Upgrade

This project involves replacing the existing GRS type K code system and open line wire along the right of way with Harmon HP1 code equipment. This project will increase the signal system's efficiency and reliability.

Signals–Commuter Rail: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Commuter Rail Signal Upg	$15.00	$0.00	$0.00	$0.00	$0.00	$10.00	$5.00	$15.00	$0.00
Total Program	**$15.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$10.00**	**$5.00**	**$15.00**	**$0.00**

ANTICIPATED FUTURE NEEDS

The future commuter rail signal program will focus on the replacement of outdated technologies with newer equipment that enhances flexibility. Obsolete code systems (which provide signal control from remote locations) are still in use, as are obsolete coded track circuits that require high maintenance. Open wire polelines are susceptible to wind and ice damage, creating maintenance and safety concerns.

Haverhill Line West Route: Signal Improvements
The scope of this project is to enhance train throughput on the West Route main line. Other tasks include the design and installation of a power switch at Ash St. Reading and the redesign of Wilmington Junction Interlocking as a universal crossover between the Wildcat and WRML.

Haverhill Line Andover/Rosemont Signal Upgrade
This project involves the upgrading of the signal system to a modern bi-directional centralized Traffic Control System (TCS) on the West Route from Andover Street to Rosemont with new CP's at Bradford and Rosemont.

West Street Bridge Cable Replacement
This project involves the replacement of cable along the West Street Bridge.

Fitchburg Line Waltham Tower Elimination
This purpose of this work is to eliminate the Waltham Tower by replacing field code units with units compatible with the new Computer Dispatch Center.

Fitchburg/Willows Signal Upgrade
This project involves replacing the existing GRS type K code system and open line wire along the right of way with Harmon HP1 code equipment.

Gloucester Branch Signal Upgrade
The purpose of this project is to improve the reliability of the Gloucester branch signal system through a series of tasks: the replacement of the track code system, the installation of a power switch, the elimination of the pole line, and the upgrading of the crossing warning systems.

Newburyport East Route Signal Upgrade
This project provides a signal upgrade from Beverly Junction to Chelsea.

Lowell Line Wilmington and Shop Interlocking/Bi-directional Signals
The scope of this project is to complete the Traffic Control System signal system upgrade on the Lowell Main Line between Wilmington Interlocking and Shop Interlocking.

Lowell Line Somerville/Winchester Bi-directional Signals
The purpose of this project is to complete a Traffic Control System (TCS) signal system upgrade on the Lowell Line between Somerville Junction and Winchester.

South Bay Track & Signal—Phase II
The first phase of this effort was completed in the 1990's. Remaining scope includes the design and installation of three additional signal interlockings and minor track work leading into the S&I. This work will support additional system expansion on the southside.

PROGRAM OVERVIEW

The Communications Department is responsible for a variety of low voltage systems at the MBTA. These include maintaining an extensive inventory of equipment and overseeing contract services for two-way radio systems, security systems, fire alarms, telephones, police/public call boxes, closed circuit television, public address (PA) systems, Light Emitting Diode (LED) signs, and the Supervisory Control and Data Acquisition (SCADA) system. These systems have been developed over time and vary significantly in age and condition. The MBTA communications system also includes the Operations Control Center (OCC).

The OCC

The OCC is one of the most automated transit control centers in the world. It consists of proven state-of-the-art computer-based technology that permits real-time monitoring and supervisory control of the signal and communication systems for all four transit lines. The Bus Radio System Network is also integrated into the OCC communication system. The OCC has a useful life of 25 years.

Telephone Equipment and Services

Telephone equipment has an average useful life of 4 years and includes:

- Electronic key and analog telephones
- ISDN equipment
- PENTA voice communications switch (controlling services for the subway and bus dispatch)
- A wayside/emergency telephone network (pump rooms, emergency exits, vent shafts, bungalows, right of ways)
- A voice messaging system
- 650 public pay telephones
- A network of special services for communications applications
- Network of copper and fiber optic cables

SCADA II

The SCADA II system monitors and controls equipment (fans, fire alarms, generators, pump rooms, etc.) at remote locations. The SCADA II system has a useful life of 20 years. It includes:

- A main and stand by central processor
- Remote control terminal cabinets

Systemwide Security

Systemwide security includes (useful life in parentheses):

- 28 closed circuit television systems (5 years)
- Public Address (PA)/ signage systems (8 years)
- Security and Alarm system (20 years)
- Fire Alarm systems (15 years)
- Police/public call boxes (10 years)

Systemwide Radios
The current radio system is an analog system and is programmed for replacement with a new digital system by 2003. All systemwide radios have a useful life of 7 years, with the exception of base stations and support equipment, which last for 25 years. Current system components include:

- On-vehicle radios (bus, subway, light rail)
- Non-revenue vehicle radios
- Police mobile radios
- Portable radios
- Base stations and support equipment
- Recorders

The current program devotes $58.4 million toward communications. Communications represents 2.1% of the total capital investment program. The majority of the communications program is devoted towards an upgrade of the Authority's radio communication system.

FUNDED PROJECTS: FY03 – FY07

Currently, there are 6 funded projects under the communications program. Most projects involve upgrading the Authority's radio communication with new state-of-the-art technology. The systemwide radio upgrade will have a positive impact on the Authority's operating budget. The remaining projects will have a neutral impact upon the operating budget.

Bus OCC Installation
This effort will consist of the construction of a new Bus Operations Control Center (BOCC) including voice and data wiring, consoles, computers, AVL equipment and programming associated with the operations of a BOCC.

Fire Department Radio System Upgrade
This effort involves furnishing and installing 17 new base stations at selected locations to service the Boston Fire Department (BFD).

Commuter Rail Information System Installation
The purpose of this effort is to install state-of-the-art software that will provide real time information for commuter rail passengers. This project will fund the installation of LED signs at 70 commuter rail stations: Newbury/Rockport (15), Haverhill (7), Lowell (6), Fitchburg (14), Worcester (2), Needham (7), Franklin (10), Attleboro/Stoughton (6), and Dorchester (3). The installation of LED signs at all stations will allow for accelerated notification to commuter rail riders of delays in service which could allow easier platform switching, particularly on the Worcester Line.

SCADA II/C-Cubed Police Talkback Box Replacement
This project involves the purchase and installation of ADA compliant assistance telephones and ancillary equipment at existing police talkback locations.

Customer Service Phone Installation
This effort funds the installation an upgraded customer service phone system to handle the 1.6 million annual phone calls the Authority receives. It will also reduce the cost of developing passenger, vehicle and employee schedules and provide for a greater flow of accurate information including enhanced service for hearing impaired customers.

Systemwide Radio Communications Upgrade
This project seeks to overhaul and expand the existing radio system and to replace the tunnel antenna system. The project will implement an upgraded digital system, taking advantage of 20 channels licensed by the FCC.

Communications: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Bus OCC Installation	$2.10	$0.92	$1.18	$0.00	$0.00	$0.00	$0.00	$1.18	$0.00
Fire Dept. Radio Sys Upg	$2.25	$1.57	$0.68	$0.00	$0.00	$0.00	$0.00	$0.68	$0.00
Commuter Rail Info System	$5.81	$5.47	$0.34	$0.00	$0.00	$0.00	$0.00	$0.34	$0.00
Police Talkback	$0.38	$0.13	$0.25	$0.00	$0.00	$0.00	$0.00	$0.25	$0.00
Customer Service Info Sys.	$2.30	$1.23	$1.07	$0.00	$0.00	$0.00	$0.00	$1.07	$0.00
Syst Radio Comm Upg	$59.00	$4.09	$9.03	$22.94	$17.74	$5.20	$0.00	$54.91	$0.00
Total Program	**$71.84**	**$13.41**	**$12.55**	**$22.94**	**$17.74**	**$5.20**	**$0.00**	**$58.43**	**$0.00**

ANTICIPATED FUTURE NEEDS

In order to improve operations throughout the system, communication upgrades are anticipated including new Public Address (PA) equipment and new mobile radios. Without system upgrades, the communications program would experience operational and maintenance inefficiencies, which could increase future maintenance costs.

New Public Address System
New PA equipment and fiber optic links for 33 stations are assumed for installation. Replacement of Voice Storage Units with modern digital systems, existing visual message signs and control systems would also be addressed.

Radio Purchase
This project consists of the purchase of portable radios to ensure worker safety along the MBTA right of way.

OCC Backup Center
Backup control systems would be utilized in case of OCC failure.

Active Train Summary System – Commuter Rail OCC (CROCC) Enhancement
The computer dispatching system currently being installed at the Commuter Rail Operations Control Center includes a feature which provides a Real Time Active Train Summary display for the lines controlled by the CROCC. This project will extend the Real Time Active Train Summary to include trains on line segments dispatched by Guilford and Amtrak, allowing one system to encompass virtually the entire commuter rail system.

Installation of Systemwide Emergency Wayside Telephones
This project will replace existing wayside emergency telephones at locations along the Orange, Red and Green Lines.

Fire Alarm Upgrades
This effort would upgrade various Authority locations to be in accordance with the latest National Fire Protection Association (NFPA) code standards.

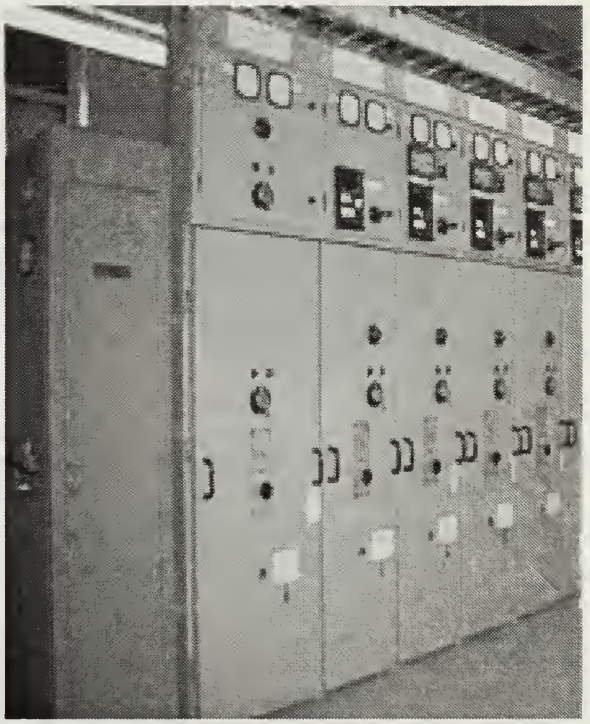
Communication Rooms Refurbishment
This project would rehabilitate or replace power, lighting, HVAC units and structural problems at various communication rooms throughout the subway system.

Fiber Optic Cable Network
This project involves the installation of single mode fiber optic cable along the Red and Green Lines.

Remote Control and Monitoring Units (RCMU) Replacement
This effort will replace the remaining antiquated emergency vent fan remote control and monitoring units (RCMU) with programmable logic controllers (PLC).

PROGRAM OVERVIEW

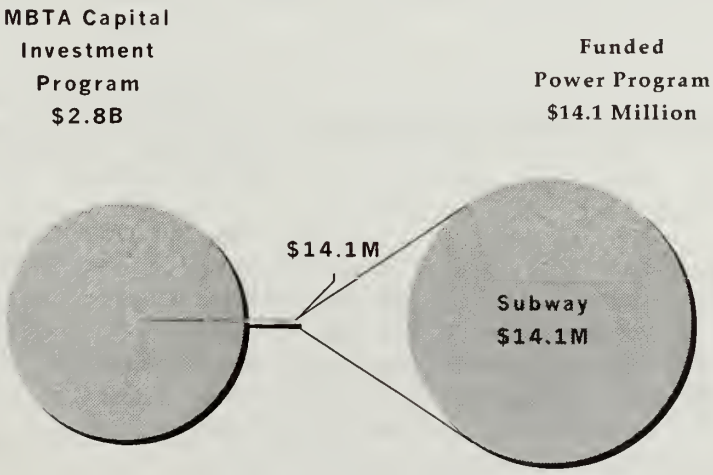
For the subway, trackless trolley and light rail, the MBTA runs power, supplied by Boston Edison, through its own distribution equipment. The power system includes cables, substations, circuit breakers, switch boxes, switch heaters, manholes, ductiles (as well as storage facilities for cable and power equipment), switchboards and circuit breakers. The power program also includes the catenary systems for the Green, Blue, and Trackless Trolley Lines.



The commuter rail system electrical network provides lighting and power for signal systems, communication systems, lift bridges, buildings, stations, parking lots, maintenance facilities, layover facilities, and grade crossings.

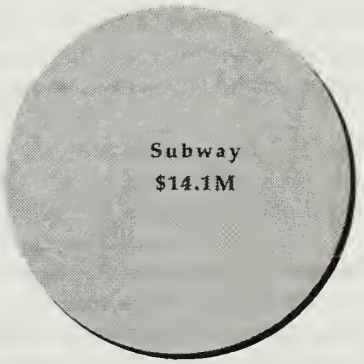
The power program is also responsible for lighting at the following five ferry facilities: Lovejoy Wharf, Hingham Shipyard, World Trade Center, Long Wharf, and the Charlestown Navy Yard.

The current program devotes $14.1 million toward power. Power represents 0.5% of the total capital investment program. All of the funding is devoted towards the subway program. Most of the current power program is devoted to the construction of a new traction power substation for the Blue Line.



POWER
SUBWAY

Funded Power Program = $14.1 Million



Subway power covers all aspects of the Authority's rapid transit and light rail power needs.

- **Power Substations**

The subway power division maintains substation equipment to convert 13.8kV AC transmission level power down to 600 volt DC distribution level power to feed third rail subway loads and 480-volt AC distribution power for passenger stations, vent shafts, and signal bungalows. Substation equipment is expected to last 30 years. In addition, the Green line has track switch equipment, which has a useful life of 15 years.

- **Unit Substations**

Unit substations loads are various and include systems necessary for transportation, specifically the signal feeds, and other systems that protect both the customers and the system. There are 48 unit substations along the subway system: 16 on the Red Line, 10 on the Green Line, 18 on the Orange Line, and 4 on the Blue Line. All substations are required to be within close proximity of the equipment they power. The useful life of a unit substation is 20 years.

- **Traction Power Substations**

There are a total of 48 traction power substations throughout the subway system: 25 on the Red Line, 7 on the Orange Line, 9 on the Green Line, and 7 on the Blue Line. Traction power stations have a useful life of 20 years.

- **Cable**

The MBTA has over 3 million feet of AC cable distributed amongst the four subway lines. All AC cable has a useful life of 40 years, except along the Green Line, where the useful life is 15 years. The Orange Line has over 600,000 feet of H-N negative cable, which has a useful life of 20 years. Also, there are 18 SWC MODs and cable on the Orange line and these cables have a useful life of 15 years. The Green Line has about 750,000 feet of DC feeder cable. The useful life of the DC cable is 30 years.

- **Overhead Contact System (OCS)**

Overhead Contact Systems (OCS) are located along the Green and Blue Lines, and on the Mattapan Highspeed line. These systems have a useful life of 20 years.

- **Passenger Low Voltage Switchgears**

There are 54 passenger station low voltage switchgears along the rapid transit and light rail system. Low voltage switchgears feed power to the subway signal system, pump rooms, car houses, escalators, elevators and other various areas of the Authority where power is required. These systems offer protection for customers, Authority equipment, and the system overall. Along the Red and Orange Lines, these systems also feed fire alarm systems, Amtrak and subway signal systems, ventilation, elevators, escalators and various other equipment. Passenger low voltage switchgears have useful lives ranging from 20 to 30 years.

The current program devotes $14.1 million toward subway power. This represents 100.0% of the power efforts programmed over the next five years. The most significant effort in this program is the construction of a new power substation and vent shaft, as part of the Blue Line modernization project.

FUNDED PROJECTS: FY03 – FY07

The Authority has 3 funded projects under the subway power in the current plan. One is a cable replacement, one replaces power equipment and the other is a system upgrade associated with the Blue Line modernization project. These projects will have a neutral impact on the Authority's operating costs.

Blue Line Negative Returns
This project encompasses the replacement of negative return cables between Maverick Station and Orient Heights Station. This will increase reliability and reduce maintenance costs.

Rectifier Transformer Replacement
The MBTA owns 80-rectifier transformer located throughout the subway system. This project will include the removal and disposal of 10 critical transformers and installation of their replacements. This will increase the reliability of the power system and will lower maintenance costs for the Authority.

Blue Line Modernization: Aquarium Traction Power (and Ventilation)
The project is the construction of a traction power substation and vent shaft building at Chatham Row and State Street. This effort will provide a new power source for the Blue Line and enable transformation of the old source to power the South Boston Transitway vehicles.

Power—Subway: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
BL-Negative Returns	$3.31	$2.52	$0.79	$0.00	$0.00	$0.00	$0.00	$0.79	$0.00
Power Rectifier	$5.00	$0.00	$3.00	$2.00	$0.00	$0.00	$0.00	$5.00	$0.00
BL-Power/Vent shaft	$32.05	$23.72	$8.33	$0.00	$0.00	$0.00	$0.00	$8.33	$0.00
Total Program	**$40.36**	**$26.24**	**$12.12**	**$2.00**	**$0.00**	**$0.00**	**$0.00**	**$14.12**	**$0.00**

ANTICIPATED FUTURE NEEDS

The power system regularly needs replacement of cables, circuit breakers, manholes, ductiles, and unit substations, as well as storage facilities for cable and power equipment. It is necessary to inspect and repair the exhaust stacks on the gas turbine generator engine (the MBTA's emergency generator), update the engine contracts with the latest technology and safety devices, conduct periodic maintenance on circuit breakers, replace aging cables, manholes, and ductiles, and refurbish aging and overloaded substation buildings. The following projects have been identified as future needs for the subway power program.

Red Line Substation Improvements
This would refurbish substation buildings and replace all the internal operating equipment at Columbia, Tenean, North Quincy, Wollaston, Quincy Center, Quincy Adams, Porter Square and Alewife. It would also upgrade Cabot substation and along the Mattapan Branch, as well as perform cable installation in various locations.

Red Line Davis Square Upgrade
The project involves the replacement of 480 HVAC cables with surface mounted systems at Harvard, Davis, and Alewife stations.

Red Line Traction Power Upgrade
The project involves the rehabilitation of all traction power stations along the Red Line.

Blue Line Power Upgrade
The project involves the replacing of the passenger station unit substations (one substation being done as part of Blue Line modifications).

Blue Line Yard Catenary
The project encompasses the complete replacement of the OCS system in the Orient Heights Yard, as well as other areas along the line.

Blue Line Power Supply (Wonderland)
The project involves the installation of two AC cables from Orient Heights substation to Wonderland substation. Also, all substation buildings will be refurbished and all the internal operating equipment replaced.

Orange Line Substation Improvements
This project would refurbish the substation buildings and replace all the internal operating equipment for substations at Wellington, Malden, and Oak Grove. Passenger station upgrades are needed at Oak Grove, Malden, Wellington, Wellington Shop, Sullivan Square, Community College, and North Station as well.

Orange Line Cable Upgrade
This project would replace and remove from the manholes all manhole cable switches on the Southwest Corridor.

Orange Line Negative Return System Upgrade
The project involves the installation of negative return cables from substations to trackway along the Orange Line.

Orange Line Power Improvements
The project involves the installation of AC cable and DC breakers along the Orange Line.

Red Line Cabot DC Breaker Replacement
The project involves the replacement of DC breakers at Cabot switch houses.

Red Line Cabot Carhouse Substation Replacement
This project would include replacement of the line and load side breakers, associated enclosures, feeder cables and control circuits, and the removal of all existing equipment at the existing unit substation at the Cabot RTL carhouse facility.

Green Line Substation Improvements
This project would refurbish the substation buildings and replace all the internal operation equipment at Riverside, Reservoir and internal operating equipment only at 45 High Street. A substation upgrade is anticipated at Riverside.

Green Line Catenary Replacement
This project would replace the complete OCS system on Commonwealth Avenue, Lake Street Yard, Lechmere, Reservoir Yard, and Huntington Avenue.

Green Line Cable Upgrade
Two AC cables would be installed from Coolidge substation to Reservoir substation. Also, track switches, controls and heaters would be replaced along the Green Line and DC cable feed from Oak Square to Watertown Square would be upgraded.

Green Line Vent Shaft Upgrade
The purpose of this project is to upgrade all vent shaft AC cables to accommodate the increase loading.

Green Line Highland Branch AC Replacement
The project involves the replacement of old, deteriorated Aerial AC traction power cables with new state of the art AC cables, along with attachments to newly installed catenary beams along the Highland branch.

Green Line Viaduct, Conduit, and Cable
The purpose of this project is to replace the ductiles between North Station and Lechmere.

Green Line Government Center Substation Replacement
The project encompasses the replacement of the existing BECO equipment and the substation that power tunnel ventilation fans, Blue and Green Line signals, pump room and station lighting.

Orange Line/Green Line Negative Return Cable
The purpose of this effort is to upgrade DC negative return system on the Orange and Green Lines.

Green Line/Blue Line Section Insulator Replacement
This project consists of the removal of existing heavy outdated section insulators, and replacing them with new lightweight state of the art design double beam section insulators on entire Green Line and Orient Heights Yard.

VDC Emergency Lighting Systems Replacement
The purpose of this project is to replace all 125 VDC emergency lighting systems at 10 stations on the Blue and Red Lines.

POWER
COMMUTER RAIL

The commuter rail electrical system provides lighting and power for signal systems, communication systems, bridges, buildings, stations, parking lots, maintenance facilities, layover facilities (Bradford, Needham and North Station), and grade crossings. It also provides redundant power at critical facilities and cables to operate mechanical power on the Beverly Drawbridge.

- **Signal Systems**

The commuter rail power programs responsible for maintaining 366 switch heaters and 24 gas switch heaters. Both switch and gas switch heaters have 20-year useful lives.

- **Layover Facilities**

Each layover facility control center has a 20-year useful life.

FUNDED PROJECTS: FY03 – FY07

Currently, there are no projects funded within the current program for commuter rail power.

ANTICIPATED FUTURE NEEDS

Improvements and upgrades to the electrical system are anticipated to avoid train delays and service interruptions. All outdated equipment including navigation lights, direct buried cable, control components, circuits, and transformers will be replaced. All switches associated with the 4160V-power distribution system will be disconnected. This corrective action will enhance system reliability and prevent power failures. Periodic inspections and maintenance will continue on all power equipment and electrical units.

Commuter Rail Systemwide Electrical Infrastructure Enhancements
The project involves the upgrade of electrical controls for Beverly draw, communications with passenger information signs and electrical data from stations, parking lots and facilities.

Passenger Station Generator Purchase
This project involves the purchase of a 200KW generator that will allow emergency operation of passenger stations.

Switch Heater Replacement
This project involves the installation of 2 sets of switch heaters, including operation test locations for the switch heaters.

Newton Lighting Fixtures
This project entails the replacement of 60 pole mounted lighting fixtures at three stations in Newton.

Emergency Lighting Tower Purchase
This project involves the purchase of 2 tow-able emergency lighting towers with generators.

Mystic Junction
This project composes of the installation of a transformer containment yard at Mystic Junction.

Fitchburg Commuter Rail Layover Facility Power
This project entails the installation of a complete power system and new track layout at Fitchburg layover facility.

Layover Unit Substations Fans & Vents Installation
This project will install ventilation fans at the Worcester, Kingston, Middleboro, and Newburyport layover facilities.

POWER
SYSTEMWIDE

Systemwide power covers the main distribution system as well as the back-up generators. This section also covers the catenary system for the trackless trolley.

- **South Boston Power Complex Gas Turbines**

The MBTA owns and maintains 2 emergency back-up generators in South Boston. They exist primarily to provide power to the Authority's power grid if the BECo 115kV lines are lost. The jet turbine units and switch stations were built in the 1980's and provide backup power to 80% of the system. Each unit has a useful life of 25 years.

- **Supervisory Systems**

The Power division maintains two supervisory control systems, which allow for continuous remote monitoring and control of all power facilities. The primary system, called SCADA, employs two VAX computers that constantly poll all traction substations and presents the received data out on to four workstation consoles located at Power Control. The backup system, called "One on One", employs a simplified system of point to point communication between microprocessors located the Cabot Control Center and the field sites. The received data is mapped on to an array of LEC lamps, which are read by dispatch personnel. The system has a useful life of 25 years.

- **Substation Equipment**

Traction power substation equipment is used to convert 13.8 kV AC transmission level power to 600 volt DC distribution level power to feed third rail subway loads and 480 volt AC distribution power level for passenger stations, vent shafts, and signal bungalows. The equipment used in the process consist of 15 kV rated AC switchgear, rectifier transformers, DC rectifiers, 600 volt rated DC switchgear, unit power transformers, station batteries, and supervisory control units. Substation equipment has an useful life of 25 to 30 years.

- **Unit Substations**

There are 65 unit substations (USS) throughout the Authority. Unit substations provide power to lights, vents, and fans. The USS loads are various and include systems necessary for transportation, specifically the signal feeds, and other systems that protect both the customers and the system. Substations are required to be in close proximity of the equipment they power. The useful life of an unit substation is 20 years.

- **Substations**

There are 10 substations: 7 located at Charlestown, 2 located at Everett Shops, and one rapid transit/light rail central control at 45 High street. These substations were built in the 1970's. The useful life of a substation is 25 years.

FUNDED PROJECTS: FY03 – FY07

Currently, there are no projects funded within the current program for commuter rail power.

ANTICIPATED FUTURE NEEDS

The following future efforts have been identified as needs for the systemwide power program.

Trackless Trolley Catenary and Pole Replacement

The purpose of this program is to replace complete OCS system throughout the North Cambridge Yard, install new track switches, controls and heaters, and replace all DC feeders supplementing the traction power.

Systemwide Power Upgrades
The supervisory control systems controlling the power operation would be replaced, and an overhaul of the OCBs at South Boston Switching Station is anticipated.

Power Vehicle Replacement Program
A program is will allow the replacement of the wire car used for all OCS maintenance and other maintenance vehicles.

Systemwide AC Cable Replacement Program
The purpose of this project is to rehabilitate AC unit substations, replace AC lengths, and complete the vacuum conversion of the AC circuit breakers.

Charlestown Cable Storage Facility
This project involves the conversion of a MBTA-owned property in Charlestown into a facility for cable storage.

Employee Facility Training Program
This would construct training facilities for power division employees.

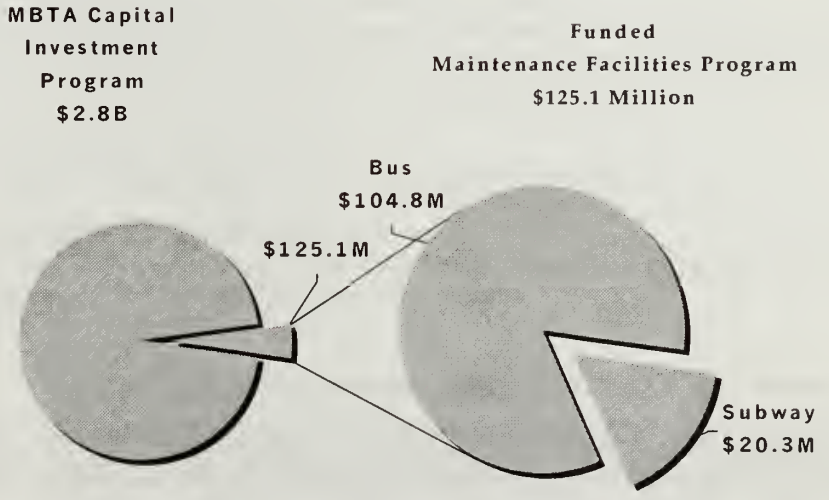
Systemwide Power Cable Replacement Program
This will allow for the provision of storage facilities for cable and power equipment, help replace worn out cable handling vehicles and aging AC and DC cable lengths as well as manholes and ductiles, and also install a 2nd "T" cable to accommodate increased system loading.

Systemwide Unit Substation Ventilation
This will install substation ventilation throughout the system.

PROGRAM OVERVIEW

Maintenance facilities, or yards and shops, are where the MBTA conducts regularly scheduled maintenance and emergency repairs on its vehicle fleets. The Authority maintains 4 rapid transit yards and shops, 4 light rail, 3 commuter rail, and 9 bus facilities, including one bus repair shop. There are also seventeen smaller general maintenance facilities throughout the system. A new facility is also being constructed to maintain Silver Line vehicles. Each facility generally includes a basic building structure with a mechanical plant and shop equipment. The expected life cycle of each of these facilities is 50 years.

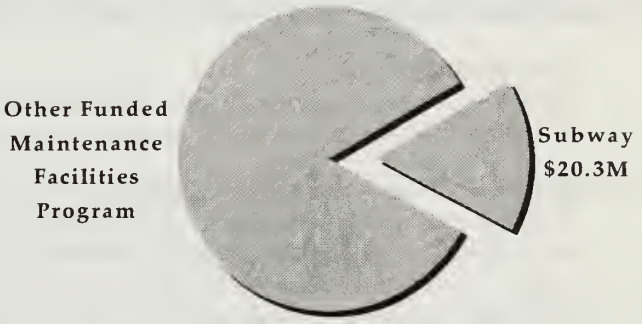
The current program devotes $125.1 million toward maintenance facilities. The maintenance facilities program represents 4.4% of the total capital investment program. The majority of the current program is devoted to the construction of new bus maintenance facilities to house CNG vehicles. The new Silver Line facility is programmed under the Transitway budget in the System Expansion section.



MAINTENANCE FACILITIES
SUBWAY

Maintenance facilities for rapid transit and light rail fleets include:

- A Red Line facility at Cabot
- An Orange Line facility at Wellington
- A Blue Line facility at Orient Heights
- Green Line facilities at Boston College, Riverside, Reservoir, and Mattapan Yard
- A main subway repair facility in Everett



All maintenance facilities have useful lives of 50 years. Included under this program is the basic structure of each facility: its roof and critical maintenance equipment (lifts, hoists, etc.).

The current program devotes $20.3 million toward subway maintenance facilities. This represents 16.2% of the total maintenance facilities program. The majority of this funding for subway maintenance facilities is devoted toward the renovations of the Orient Heights Carhouse as part of the Blue Line modernization project.

FUNDED PROJECTS: FY03 – FY07

There are currently 3 projects relating to subway maintenance facilities. One will provide cranes for the Everett facility, another will provide a spare parts warehouse and a third is related to the Blue Line modernization project. The projects listed below will have a neutral impact on the Authority's operating budget.

Subway Facility Improvements

Facility Crane (3) Procurement Everett Main Repair Facility

This project will procure and install 3 new cranes for the Main Repair Facility. Only cranes can move certain shop items and without them working properly, heavy components cannot be moved around the shop, or loaded on trucks, thus impacting productivity. The project will lower operating costs due to lower repairs.

Spare Parts Facility Warehouse

Construct a facility to house spare parts for vehicles and other capital needs.

Blue Line Orient Heights Car House—Phase I

This project is being performed as part of the Blue Line Modernization effort. Phase I will make the required renovations to accommodate six-car trains in the car house by 2004.

Maintenance Facilities—Subway: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Subway Facility Improv.	$1.50	$0.00	$0.85	$0.65	$0.00	$0.00	$0.00	$1.50	$0.00
BL-OH Carhouse-Ph. I	$20.65	$1.89	$9.28	$9.48	$0.00	$0.00	$0.00	$18.76	$0.00
Total Program	**$22.15**	**$1.89**	**$10.13**	**$10.13**	**$0.00**	**$0.00**	**$0.00**	**$20.26**	**$0.00**

ANTICIPATED FUTURE NEEDS

The following projects have been identified as future needs for subway maintenance facilities.

Blue Line Orient Heights Car House—Phases II & III
This project will complete the modernization of the Orient Heights car house as part of the final phase of Blue Line Modernization.

Crane Replacement
The project involves the procurement and installation of 9 new overhead cranes in the main subway repair facility. The existing 60-year old cranes require extensive maintenance, resulting in increasing downtime and costly repairs.

Systemwide Vehicle Washing Replacement
Vehicle washing systems throughout the system must be replaced with a recycling wash system to reduce water and sewer charges. All wash equipment will be modified to accommodate a water stripper system.

Red Line
This project would replace the Cabot facility and expand the shop, the office and staff facilities.

Orange Line
This effort would renovate the Wellington facility. It would also add a second rinse unit and construct a separate storage facility for non-revenue vehicles.

Green Line
This project would replace all overhaul doors at the Reservoir facility on the service needs all of its overhead doors replaced. The lifts perform minor repairs are needed to the brick exterior.

MAINTENANCE FACILITIES
COMMUTER RAIL

Commuter rail maintenance facilities include the Boston Engine Terminal in Somerville, the Storage and Inspection facility in South Boston, and the Light Inspection facility in Readville.

- The Boston Engine Terminal (BET) is a new state-of-the-art facility constructed in 1997 and consists of over 8 acres under one roof. The building consists of areas for service and inspection, periodic maintenance, wheel truing, coach repair and locomotive repair along with allied shops.

- The South Side Service and Inspection Facility is a two-track structure located at Wydett Circle in South Boston. This facility can accommodate two 9-car trains and has fueling and sanding capabilities as well as the ability to perform running repairs.

- The Readville Light Inspection facility was constructed at the same time as the BET. It is a Butler type building consisting of three tracks and capable of holding six coaches. It is dedicated to special projects such as retrofits, wheel truing and ACSES installation.

Commuter rail maintenance facilities, including the basic structure, roof, and critical maintenance equipment, have useful lives of 50 years.

FUNDED PROJECTS: FY03 – FY07

Currently, there are no funds devoted toward the commuter rail maintenance facilities program.

ANTICIPATED FUTURE NEEDS

The following projects have been identified as future needs for commuter rail maintenance facilities.

Maintenance Facility Upgrade Program—Readville
An upgrade program for replacement of the Readville facility is anticipated.

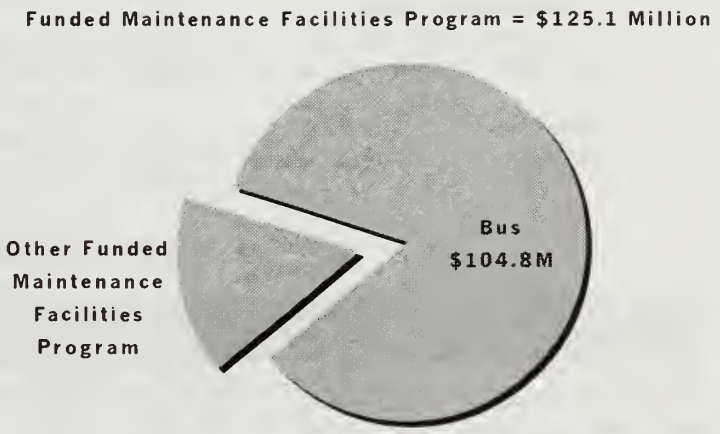
Maintenance Facility Upgrade Program—South Boston Service and Inspection
A future upgrade program is anticipated for the Service and Inspection facility. Included under this program is the installation of new vandal-proof stations with features required for Phase II firefighter service, and installation of two new firefighter service panels, complete with all-control wiring.

Mid-day Layover Facility
The project involves the design, acquisition, and construction of additional mid-day storage for Southside operations.

MAINTENANCE FACILITIES
BUS

The Authority maintains seven bus garages and one central bus repair shop.

- Albany Street (built in 1941)
- Bartlett (built in 1931)
- Cabot (built in 1975)
- Charlestown (1979)
- Fellsway (built in 1925)
- Lynn (built in 1936)
- Quincy (built in 1930)
- Everett Central repair shop



Bus maintenance facilities have a useful life of 50 years. Included under this program is basic structures of each facility, its roof, and critical maintenance equipment (lifts, hoists, etc.).

The current program devotes $104.8 million toward bus maintenance facilities. This represents 83.8% of the total maintenance facilities program. The majority of the funding is for the design and construction of a new bus facility to replace Bartlett.

FUNDED PROJECTS: FY03 – FY07

There are 9 projects under bus maintenance facilities. The projects will have a neutral impact on the Authority's operating budget.

Miscellaneous Facility Improvements
This project will replace aging infrastructure and reduce maintenance costs and also fund improvements at the Light Maintenance Facility in Charlestown.

Bus Facilities Upgrade:

Maintenance Facilities Bus Hoists
This effort will provide the replacement of all remaining in-ground lifts at Albany, Bartlett, Quincy and Lynn.

Charlestown Bus Storage Garage Sprinkler System Upgrade
This project will fund the conversion of unheated area wet system to a dry type system for insurance and safety reasons at this bus storage facility.

Cabot Bus Storage Sprinkler System Upgrade
The purpose of this project is to convert unheated area wet system to a dry type system for insurance and safety reasons at this bus storage facility.

Quincy Bus Gasoline Fuel
This project funds the installation of a new gasoline dispensing system including the replacement of the underground storage tank, the single pump dispenser and all associated piping/conduit. The facility is shutdown and vehicles are fueled at other Authority locations. The project will have a positive impact on currently operating costs.

Bus Facility Capital Maintenance
This effort will fund the maintenance and improvements to the various bus facilities throughout the system.

Southampton Street Maintenance Facility
This project involves the design and construction of an alternative fuel bus maintenance and storage facility in South Boston. This facility will serve the Silver Line and other BRT projects.

Arborway Bus Facility
The project involves the design and construction of a bus maintenance and storage facility at the Arborway Yard. This new facility will replace the aging and undersized Bartlett Street garage.

CNG Facility Construction
This project involves the conversion of existing facilities to fuel, store and maintain CNG buses at various locations.

Maintenance Facilities—Bus: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Misc Roof Rehab	$1.60	$0.54	$0.46	$0.60	$0.00	$0.00	$0.00	$1.06	$0.00
Bus Facilities Upgrade	$0.70	$0.00	$0.55	$0.15	$0.00	$0.00	$0.00	$0.70	$0.00
Bus Facility Capital Maint.	$1.00	$0.00	$1.00	$0.00	$0.00	$0.00	$0.00	$1.00	$0.00
Southampton St. Facility	$35.60	$8.16	$17.74	$9.70	$0.00	$0.00	$0.00	$27.44	$0.00
Arborway Bus Facility	$60.00	$5.33	$19.67	$25.00	$10.00	$0.00	$0.00	$54.67	$0.00
CNG Facility Constr.	$20.00	$0.08	$3.38	$13.87	$2.67	$0.00	$0.00	$19.92	$0.00
Total Program	**$118.90**	**$14.11**	**$42.80**	**$49.32**	**$12.67**	**$0.00**	**$0.00**	**$104.79**	**$0.00**

ANTICIPATED FUTURE NEEDS

There are two specific future projects anticipated by the Authority. In addition, due to the aging of bus facilities, various exterior structural projects are also anticipated.

Lynn Garage Fire Alarm Upgrade
The objective of this project is to modify and replace the fire protection system at the Lynn garage and retail space.

Charlestown Compressor Systems Replacement
The project involves the replacement of existing spent compressors with new compressors and air dryers at the Charlestown Bus Repair Garage.

MAINTENANCE FACILITIES
Systemwide

Systemwide maintenance facilities include structures and buildings that the Authority uses for various tasks and purposes. There are sixteen systemwide maintenance facilities as follows:

- Cabot Heating Plant
- Auto Repair Facility
- Signal Repair Facility
- MOW Training and Backup CC
- Testing Lab
- Arborway Yard
- Oak Square Emergency Garage
- Campbell's Gate MOW
- Truck Storage and Repair
- Rail Bending Shop
- Light Maintenance Shop
- Heavy Maintenance Shop
- Pipefitter's Building
- Materials Storehouse
- Salt Sheds
- Rice Buildings

All systemwide maintenance facilities have a useful life of 50 years. Currently, there are no funds programmed for systemwide maintenance facilities.

FUNDED PROJECTS: FY03 – FY07

There are no identifiable projects funded within the current program for systemwide maintenance facilities.

ANTICIPATED FUTURE NEEDS
The projects listed below have been identified as future needs for systemwide maintenance facilities.

Charlestown Heating Plant
The project involves the installation of a new gas-fired boiler system at Charlestown buildings No. 2 and No. 3.

Charlestown Roof Replacement
This project consists of the replacement of the rooftop and HVAC system at Charlestown.

PROGRAM OVERVIEW

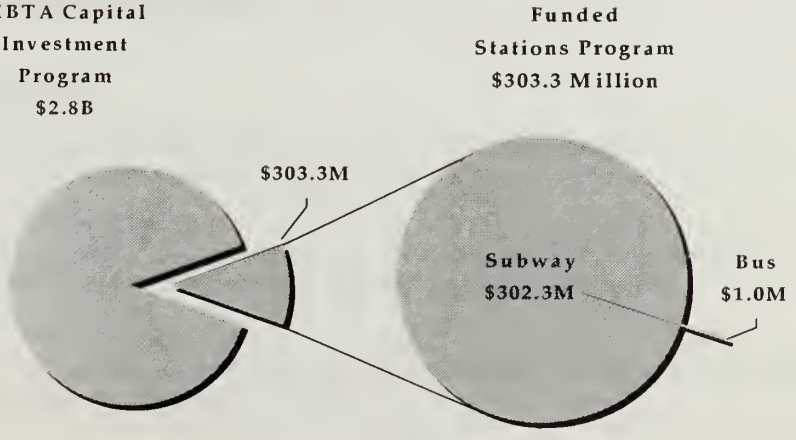
This program includes all MBTA rapid transit, light rail, Silver Line, and commuter rail stations. There are 248 existing and 19 new stations under design or construction.

This section also includes major bus transfer stations, bus stops, and shelters.

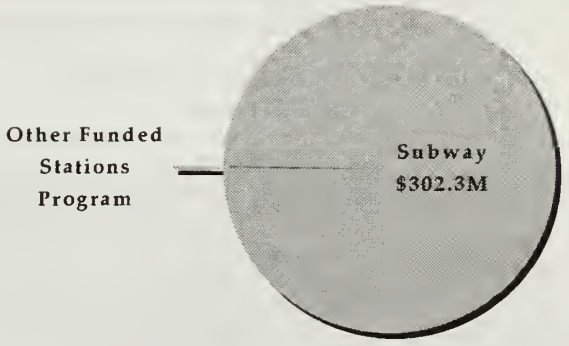
Stations are composed of the basic structure, roofs, platforms, lights, and shelters. Elevators and escalators are included under systemwide facilities. Fare collection equipment and collector booths are included in the fare equipment section of this document.

The current program devotes $303.3 million toward stations. This represents 10.8% of the current capital investment program. The majority of the current station funding is devoted to subway stations, particularly work to modernize Blue Line stations and upgrade the Red line stations in Dorchester.

Silver Line and Greenbush commuter rail station construction are covered under the System Expansion section of this document. Also, improvements to several existing commuter rail stations are included as part of programmed parking expansions, which are located in the System Enhancement section of this document.



STATIONS
SUBWAY



The MBTA has a total of 131 rapid transit and light rail stations, which includes 6 shared stations (North Station, Haymarket, State Street, Government Center, Park Street, and Downtown Crossing).

- The Red Line has a total of 22 stations
- The Blue Line has a total of 12 stations
- The Orange Line has a total of 19 stations
- The Green Line has a total of 71 stations, on 4 routes: Boston College/B Line (23 stations), Cleveland Circle/C Line (13 stations), Riverside/D Line (13 stations) and Arborway/E Line (11 stations). The remaining 11 stations are on the Central Subway serving more than one branch.
- The Mattapan Highspeed line has 7 surface stations

Subway stations typically have a useful life of 50 years. The current program devotes $302.3 million toward subway stations. This represents 99.7% of the funding devoted to stations. The majority of this funding is associated with the Blue Line modernization project and the restoration of the Dorchester Red Line stations.

FUNDED PROJECTS: FY03 – FY07

There are 9 funded projects under the current plan. One is a historic restoration project along the Green Line, 5 projects are related to the modernization of the Blue Line, and 4 involve the restoration and modernization of the Red Line Dorchester stations. These efforts will have a neutral impact on the Authority's operating budget.

Blue Line Modernization:

State Street Station
This project will complete platform lengthening and modernization at State Street station. The intent is to allow this station to serve more passengers and accommodate six car trains.

Government Center Station
This project will complete platform lengthening and modernization at Government Center station. The intent is to allow this station to serve more passengers and accommodate six car trains.

Maverick/Orient Heights Stations
This project will complete platform lengthening and modernization Maverick and Orient Heights stations to facilitate six car trains along the Blue Line.

Blue Line Modernization: Airport Station
The project consists of the design and construction of a new Airport Station approximately 500 feet closer to Wood Island Station in coordination with MHD CA/T and MPA Logan Projects. The project will allow for more efficient transfer of passengers and the accommodation of six car trains.

Blue Line Modernization: Aquarium Station Modernization
The project completes platform lengthening and modernization of Aquarium station to accommodate six car trains.

Red Line (Dorchester) Modernization:

Savin Hill Station
The project consists of the rebuilding of Savin Hill station. The existing head house and platforms will be replaced and the station will be made ADA accessible. The project is intended to provide easier access for the riding public and a more comfortable and secure environment for passengers.

Fields Corner Station
This project will modernize Fields Corner station including a new street level head house, lowering the bus ways and making the station fully accessible. The completion of the project will allow easier access for all patrons, provide better service and enhance intermodal transfers.

Shawmut Station
The scope of this project consists of waterproofing the station, making if fully accessible and renovating the head house. The project will enhance the comfort and convenience for the riding public.

Ashmont Station
This effort renovates Ashmont station and includes a new roof, restoration work on the bus way and PCC viaduct, new furniture and lighting. The project is intended to provide the riding public with a more comfortable and secure environment.

Stations—Subway: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
BL Station Mods	$232.85	$11.75	$15.01	$25.78	$39.98	$44.33	$53.99	$179.10	$42.00
BL Mod-Airport Stn	$31.50	$16.02	$10.07	$5.41	$0.00	$0.00	$0.00	$15.48	$0.00
BL Mod-Aquarium Stn.	$112.91	$84.82	$13.08	$10.07	$4.94	$0.00	$0.00	$28.09	$0.00
RL Mod-Dorchester Stns	$80.17	$0.52	$12.56	$26.75	$27.02	$13.33	$0.00	$79.65	$0.00
Total Program	**$457.43**	**$113.11**	**$50.72**	**$68.00**	**$71.94**	**$57.66**	**$53.99**	**$302.33**	**$42.00**

ANTICIPATED FUTURE NEEDS

There is one project that is an anticipated future need for subway stations.

Green Line Park and Boylston Stations Kiosks – Interior (Phase II)
The project will restore the interior of historic headhouses (two at Park Street Station, two at Boylston Street Station).

STATIONS
COMMUTER RAIL

There are four main commuter rail lines on the north side of the system, which terminate at North Station. The south side system has seven lines terminating at South Station. Four of the southside lines also provide service to Back Bay station. The MBTA currently has 125 commuter rail stations on these 11 commuter rail lines:

North Side

- North Station terminal
- 18 stations on the Newbury/Rockport line
- 13 stations on the Haverhill/Reading line
- 7 stations on the Lowell line
- 17 stations on the Fitchburg/South Acton line

South Side

- South Station terminal
- Back Bay
- 15 stations on the Framingham/Worcester line
- 3 stations on the Fairmont line
- 12 stations on the Franklin line
- 12 stations on the Attleboro/Stoughton line
- 9 stations on the Middleborough/Lakeville line
- 9 stations on the Needham line
- 7 stations on the Plymouth/Kingston line

Commuter rail stations have useful lives ranging from 35 to 70 years, depending upon structure type. Commuter rail stations generally consist of a low-level platform with lights, shelters, and other components. Mini-high platforms are provided at most stations and full high-level platforms are found along the Old Colony lines, the downtown terminals and at Worcester station.

System expansion will bring 4 new commuter rail stations online over the next few years, including Southborough, Westborough, and Ashland on the Worcester branch, and JFK/UMass on the Old Colony branch. A new station at the Woburn Regional Transportation Center will replace the adjacent Mishawum station on the Lowell line. Minor commuter rail station improvements are also made as part of parking improvement and expansion projects. Currently, station improvements are programmed being as part of parking projects at the Wilmington and Hamilton/Wenham stations. In addition, the MBTA's efforts to design and construct the Greenbush and Fall River/New Bedford commuter rail projects are described in the System Expansion section.

FUNDED PROJECTS: FY03 – FY07

There are currently no funds devoted towards the commuter rail station program.

ANTICIPATED FUTURE NEEDS

One project has been identified as a future commuter rail station need.

Station Resurfacing Program
This effort will provide funding for a program to resurface commuter rail station platforms.

STATIONS
SILVER LINE

There are 13 new Silver Line stations under construction and upon service implementation, the existing Dudley Station will become part of the Silver Line. A total of 10 new stations along Washington Street will open in 2002, with service terminating at Dudley Station in Roxbury. Three additional Silver Line stations along the South Boston Piers Transitway will open in 2003. Silver Line stations are expected to have a useful life of 50 years.

FUNDED PROJECTS: FY03 – FY07

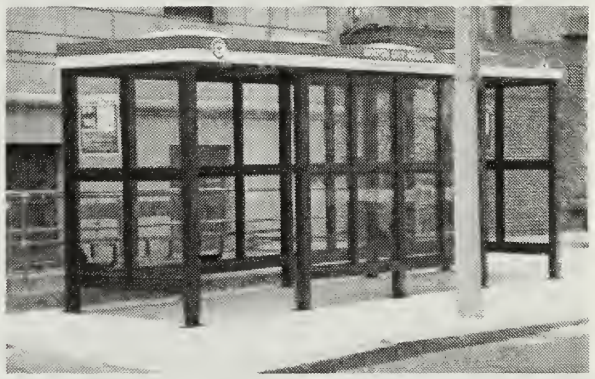
Silver Line station construction is funded under System Expansion.

ANTICIPATED FUTURE NEEDS

There are currently no anticipated future needs for Silver Line station repair or upgrade.

STATIONS
BUS

The MBTA operates a total of 159 bus and trolley routes, which serve about 9,000 bus stops. In general, capital components found at bus stops include only bus stop signage. Some also have benches and 303 include shelters. There are several major bus terminals (e.g. Harvard Square, Ruggles, Ashmont, Forest Hills) but with the exception of the South Station Transportation Center and the Dudley Bus Station, these structures are considered part of intermodal subway stations. All bus stations have useful lives of 50 years.



The Authority has devoted $1.0 million towards the bus stations program. This represents 0.3% of the total station effort.

FUNDED PROJECTS: FY03 – FY07

There is one bus station project. This effort will have a neutral impact on the Authority's operating budget.

Systemwide Bus Shelter Installation
This project involves the installation of 300 bus shelters throughout the urban core of the system.

Stations—Bus: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Systemwide Bus Shelters	$1.00	$0.00	$0.20	$0.20	$0.20	$0.20	$0.20	$1.00	$0.00
Total Program	**$1.00**	**$0.00**	**$0.20**	**$0.20**	**$0.20**	**$0.20**	**$0.20**	**$1.00**	**$0.00**

ANTICIPATED FUTURE NEEDS

Two specific projects have been identified as future needs for bus stations.

Back Bay Busway Repair
The busway at Back Bay station will require minor repairs.

Bus Facility Ruggles Station Pavers
The pavers at Ruggles Station are deteriorating and will need replacement in the future.

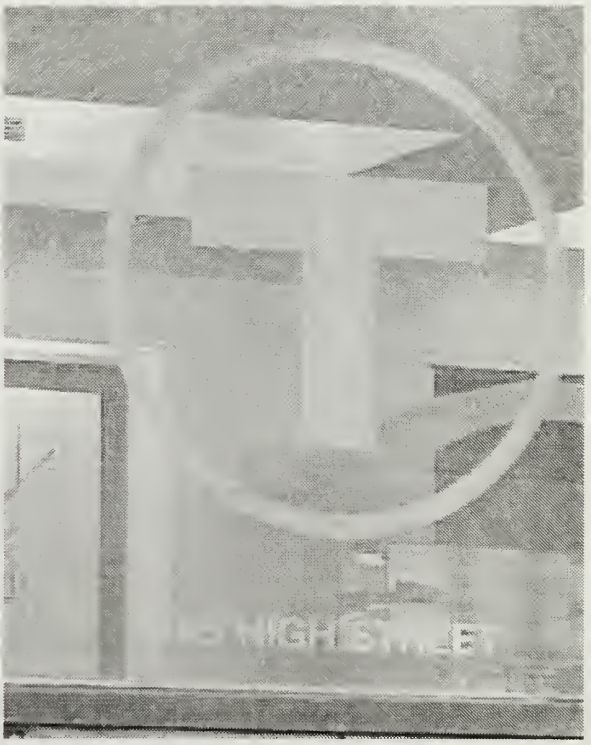
PROGRAM OVERVIEW

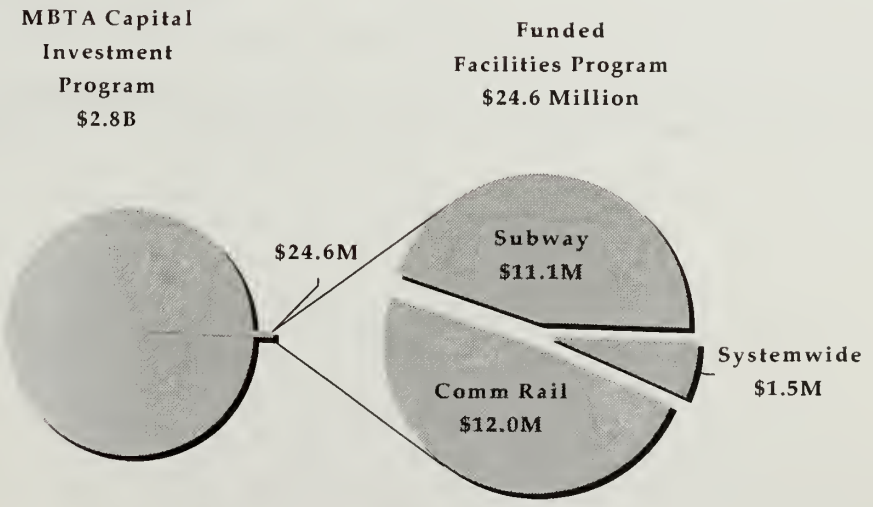
Facilities include administrative buildings, operator's lobbies, ferry terminals, vent buildings, storage buildings, noise walls, tunnels, culverts, retaining walls, parking garages, parking lots, escalators and elevators.

MBTA-owned administrative buildings include: 45 High Street, 500 Arborway, Charlestown (Buildings 2 and 3), the Cobble Hill commuter rail operations facility, the Quality Control Facility on Freeport Street, and the police station on Southampton Street. The remaining facilities under this program are located throughout the transit and commuter rail systems. All facilities usually have a useful life of 50 years.

Fencing, which prevents trespassers from gaining access to tracks and fast-moving trains, is also included in this section. Fencing has a considerable impact on maintenance costs, particularly on the commuter rail system.

The current program devotes $24.6 million toward facilities. The facility program represents 0.9% of the total capital investment program spending.

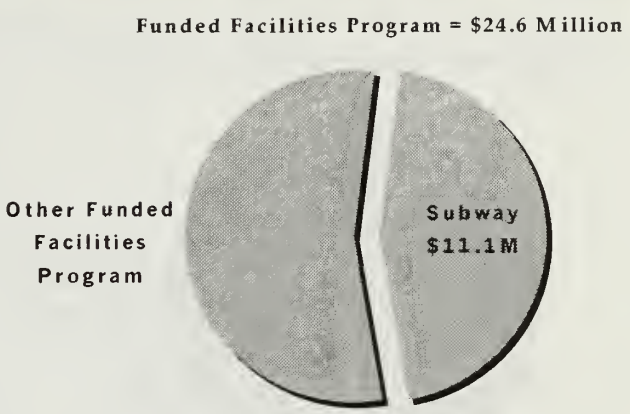




FACILITIES
SUBWAY

Subway facilities include administrative buildings and operator's lobbies on each of the lines, ventilation structures and other miscellaneous structures.

The current program devotes $11.1 million toward subway facilities. This represents 45.3% of the total facilities.



FUNDED PROJECTS: FY03 – FY07

There is one project under the subway facility program. This involves the construction new vent buildings to improve ventilation. The project will have a negative impact on the Authority's operating budget but will improve safety.

Red Line Ventilation Improvements—Phase I
The project consists of the design of 4 ventilation shafts to provide emergency ventilation for the Red Line Subway. Vent shafts are proposed between each of the downtown stations, from Charles/MGH on the north to Broadway on the South. Two of the four facilities are funded for construction under Phase I.

Facilities—Subway: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
RL-Vent. Improv.	$19.00	$7.87	$6.51	$4.13	$0.50	$0.00	$0.00	$11.14	$0.00
Total Program	**$19.00**	**$7.87**	**$6.51**	**$4.13**	**$0.50**	**$0.00**	**$0.00**	**$11.14**	**$0.00**

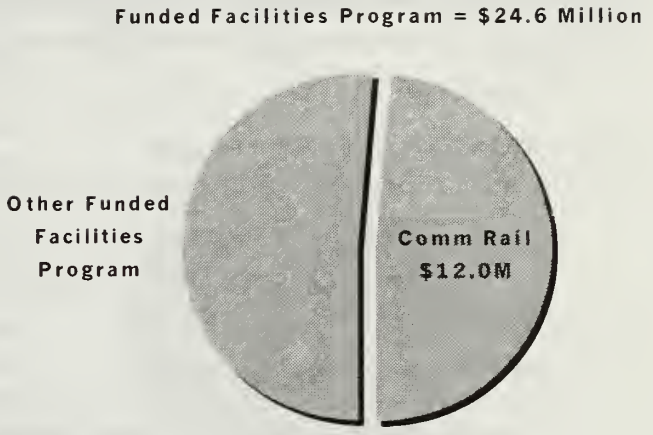
ANTICIPATED FUTURE NEEDS

There is one project identified as a future need for subway facilities.

Red Line Ventilation Improvements—Phase II
This would provide construction funding for the remaining two vent shafts designed under the current effort.

FACILITIES
COMMUTER RAIL

Commuter rail facilities include any structures or facilities at the eleven outlying layover points, five maintenance buildings and five storage buildings throughout the system. It also includes the administrative facility operation center at Cobble Hill.



Layover Facilities
The Authority has layover facilities at the following locations:

- Rockport
- Newburyport
- Bradford
- Lowell
- Fitchburg
- Needham
- Franklin
- East Junction
- Kingston
- Middleborough
- Worcester

Layover facilities are located at or near the end of commuter lines and are used as nighttime storage locations for train sets as well as points for fueling and performing minor repairs to rolling stock equipment. The construction of a new layover facility in Pawtucket, RI is anticipated to begin in 2001. All layover facilities have a useful life of 50 years.

Maintenance and Storage Facilities
All maintenance storage facilities have useful lives of 50 years. The following are MBTA maintenance facilities: Readville Mechanical, Readville MOW, Abington MOW, Wilmington MOW, and Roland Street MOW.

The following are MBTA equipment storage facilities: Lowell, Attleboro, Franklin, Rockport, and Wilmington.

Fencing along the commuter rail is used to prevent trespassers, and protect pedestrians, and MBTA property. It is necessary to keep trespassers from interfering with fast moving trains, and also preventing illegal dumping of trash and contaminated materials.

The current program devotes $12.0 million toward commuter rail facilities. This represents 48.7% of the total facilities effort.

FUNDED PROJECTS: FY03 – FY07
There is one project for commuter rail facilities: the construction of a layover facility in Pawtucket, RI to replace the current Attleboro location. This project will have a neutral impact on the MBTA's operating budget.

Pawtucket Layover Facility
Construction of a commuter rail layover facility in Pawtucket, RI will replace the South Attleboro facility and provide the MBTA with more efficient train set operation. The facility will also better serve the commuter ridership from Providence, RI. The Rhode Island Department of Transportation (RIDOT) is providing federal funds for this effort.

Facilities—Commuter Rail: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Pawtucket Layover Fac	$18.50	$6.53	$7.97	$4.00	$0.00	$0.00	$0.00	$11.97	$0.00
Total Program	**$18.50**	**$6.53**	**$7.97**	**$4.00**	**$0.00**	**$0.00**	**$0.00**	**$11.97**	**$0.00**

ANTICIPATED FUTURE NEEDS

The projects listed below have been identified as anticipated future needs for commuter rail facilities.

Kingston Layover Cable Extension

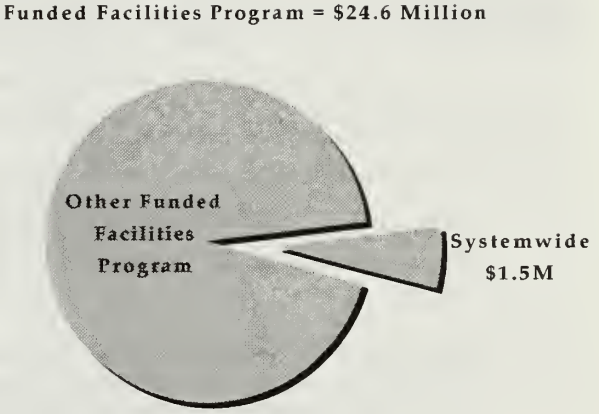
The project consists of the extension of cables at the Kingston layover facility to allow for proper positioning of trainsets on layover tracks.

Fitchburg Roundhouse – Demolition

This project will demolish and remove building materials in the partially collapsed roundhouse at Fitchburg. This will occur following the abatement of asbestos at Fitchburg, which is discussed in the environmental compliance section.

FACILITIES
SYSTEMWIDE

Systemwide facilities include administrative buildings, and other miscellaneous structures owned by the MBTA. These may include inactive structures, noise walls, office buildings or systemwide support facilities. MBTA owned administrative buildings include 45 High Street, 500 Arborway, Charlestown, the commuter rail operations facility at Cobble Hill, the Quality Control Facility on Freeport Street, and the police station on Southampton Street. The MBTA facility program also includes the ferry pier at Hingham. Other ferry facilities are leased. Parking lots and garages are also included here, as are elevators and escalators. The MBTA owns approximately 31,400 surface parking spaces and 10,600 garage spaces with useful lives of 50 years. The Authority has 100 elevators and 132 escalators located throughout the system. All elevators and escalators have 20-year useful lives. There are no current funds for systemwide facilities.



The current program devotes $1.5 million toward systemwide facilities. This represents 6.0% of the facilities effort.

FUNDED PROJECTS: FY03 – FY07

There are 5 projects scheduled for systemwide facilities. All will have a neutral impact on the Authority's operating budget.

Hingham Terminal Improvements—Phase I
This work involves general improvements to the Hingham terminal including covering a portion of the walkway, enhancing the lighting and making the gangway accessible.

Operations Facilities Upgrade:

45 High Street 25-Ton AC Unit (7th Floor)
This request will fund the procurement and installation of a 25-ton air conditioning unit for the 7th floor operations, due to increased failure rates of the building's HVAC system.

45 High Street Chilled Water System Modifications
The project involves the installation of 6 to 8 valves and related piping to main-chilled water heaters at 45 High St.

Systemwide Sprinkler System Upgrade
This effort will upgrade additional MBTA facilities to a dry type sprinkler system on an as-needed basis.

Systemwide Safety Upgrade Program
This project funds the upgrade of elevators and escalators throughout the system. This effort will improve the safety of these facilities and reduce maintenance costs.

Facilities—Systemwide: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Hingham Terminal - Ph. I	$0.91	$0.28	$0.63	$0.00	$0.00	$0.00	$0.00	$0.63	$0.00
Operations Facilities Upg	$0.35	$0.00	$0.00	$0.35	$0.00	$0.00	$0.00	$0.35	$0.00
Systemwide Safety Upg.	$2.84	$2.34	$0.50	$0.00	$0.00	$0.00	$0.00	$0.50	$0.00
Total Program	**$4.10**	**$2.62**	**$1.13**	**$0.35**	**$0.00**	**$0.00**	**$0.00**	**$1.48**	**$0.00**

ANTICIPATED FUTURE NEEDS

The following projects have been identified as future needs for systemwide facilities.

45 High Street-HVAC Chiller Replacement
The project involves the installation of a 200-ton rooftop mounted HVAC chiller tied into the existing cooling tower system.

Elevators and Escalators
In addition to the ongoing maintenance programs, the replacement of elevators and escalators as they reach their useful service life is anticipated. Escalators, in particular, are required to operate over an extended period of time each day and, in some instances, are exposed to the elements.

Escalator Safety Skirt Panels
The project encompasses the purchase and installation of escalator safety skirt panel devices.

Parking Lots and Garages
Increasing parking capacity over the past 10 years has created a future need for restriping, resurfacing, and surface patching for parking lots. The concrete decks and ramps at parking garages will require future patching.

Systemwide Pump Room Rehabilitation Program
A pump room rehabilitation program is suggested for the future.

Systemwide Paving Program
A program is anticipated to maintain and replace deteriorated pavement for facilities throughout the system.

FACILITIES
TUNNELS, WALLS, CULVERTS

Tunnels, walls, and culverts are located throughout the system. Tunnels are mainly on the core subway system and in several locations in the commuter rail network. The rapid transit system operates within 14 miles of tunnels. The light rail system operates within 5 miles of tunnel. Tunnels generally have a useful life of 100 years. The MBTA's network of retaining walls and culverts is also extensive. There are 767 culverts along the commuter rail and 16 on the subway system. All culverts have a useful life of 50 years. Retaining walls have a useful life of 50 years and are located along the commuter rail and rapid transit systems.

Currently, there are no projects programmed for the Authority's tunnels, walls, and culverts.

FUNDED PROJECTS: FY03 – FY07

Currently, there are no discreet capital projects funded within the capital program for tunnels, walls, and culverts. Some tunnel work is performed, however, under other improvement projects.

ANTICIPATED FUTURE NEEDS

The following are anticipated future tunnel needs.

Systemwide Tunnel Repair and Assignment

Tunnel repairs such as the grouting of leaks and repair of loose concrete is anticipated. A feasibility study should determine the estimated cost of comprehensive drainage improvements to reduce water migration around the tunnel. A complete assessment report will then be developed based on more detailed inspection and evaluation of any leaks and concrete deterioration that are discovered.

Commuter Rail Culverts and Retaining Wall Repair Program

A culvert and retaining wall program is anticipated to inspect these structures using a standardized method for consolidating different sizes and materials into simple condition rating, which will help establish priorities for repair.

Back Bay Station Tunnel Improvements

Ventilation, radio communication, and egress emergency improvements are anticipated in the Back Bay tunnel. This effort will lead to an improvement in the tunnel system at Back Bay.

Needham Heights Retaining Wall Rehabilitation

The retaining wall behind the mini-station platform at Needham Heights station has reached its useful life.

PROGRAM OVERVIEW

The MBTA maintains 560 bridges, made up of 412 railroad bridges, 60 transit bridges, and 88 highway bridges (carrying vehicles over track and rights-of-way). Railroad and transit bridges typically have a useful life of 70 years, while highway bridges have a useful life of 50 years. Both railroad and transit bridges have the same maintenance schedule. Renewal of bridge deck replacement occurs after 50 years of use. Bridge deck waterproofing is replaced after 40 years, and steel is repainted after 30 years. Highway bridges, however, have a different maintenance schedule. Bridge deck replacements occur after 30 years of use and steel is repainted every 15 years.

In an effort to upgrade and maintain these bridges, the Authority has developed a Bridge Management Program known as the PONTIS program. This program is used to evaluate the condition of each bridge based on results of the inspection and load rating analysis of the bridge. This program also establishes a priority list for the rehabilitation/reconstruction of these bridges. A bridge inspection program is tailored to ensure that all the bridges received adequate attention. The frequency and type of inspection for each bridge depends on the structural condition of the bridge, such as fraction critical bridges or those bridges that are posted for speed and load restrictions. Bridges in good condition receive routine inspection every 24 months while fracture critical bridges receive in-depth inspection every 12 months.

The PONTIS program enables the Authority to maintain an up-to-date database of all the Authority owned bridges. It also contains information on the frequency of inspection for each bridge, and detailed structural information such as the bridge description, dimensions, and the conditions of the deck, superstructure and sub-structural elements. The database also contains inventory and operating values of each bridge, which indicates the load carrying capacity of the structure. A priority list for rehabilitation/replacement is established based on the ratings.

The current program devotes $14.9 million toward bridges. The bridge program represents 0.5% of the total capital investment program.

FUNDED PROJECTS: FY03 – FY07

There are 4 active bridge efforts, including 5 new bridge construction projects and 3 new design efforts. The majority of bridge reconstruction projects entail complete structure replacement, most of which are nearing completion. These efforts will have a neutral impact on the operations budget.

Bridge Management Engineering Program (BMEP)
This program includes efforts to inventory and/or inspect and rate highway, transit, pedestrian and utility bridges throughout the MBTA's transit system. It also includes design contracts for 6 bridge construction projects.

Bridge Construction Program
This project funds the reconstruction or rehabilitation of five bridges in the MBTA system: Chestnut Hill Busway, Shawmut Junction, Bay Street, Redfield Street, and Reservoir Road.

Railroad Bridge Inspection Program
This program provides for the on-going inspection and rating of railroad bridges throughout the MBTA's commuter rail system.

Morrissey Blvd. Reconstruction
The project involves the completion of the redesign and replacement of the Morrissey Blvd. bridge with a single span, ballasted deck, welded steel plate girder type bridge.

Bridges Program: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
BMEP	$21.60	$20.69	$0.91	$0.00	$0.00	$0.00	$0.00	$0.91	$0.00
Bridge Construction Pgrm	$11.38	$0.00	$4.85	$5.95	$0.58	$0.00	$0.00	$11.38	$0.00
Bridge Inspection Prgm	$3.00	$0.45	$2.00	$0.55	$0.00	$0.00	$0.00	$2.55	$0.00
Morrissey Bridge Rehab	$1.25	$1.20	$0.05	$0.00	$0.00	$0.00	$0.00	$0.05	$0.00
Total Program	**$37.23**	**$22.34**	**$7.81**	**$6.50**	**$0.58**	**$0.00**	**$0.00**	**$14.88**	**$0.00**

ANTICIPATED FUTURE NEEDS

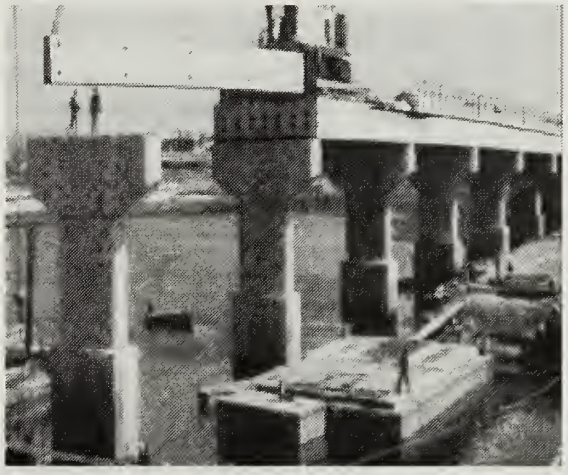
The average age of Authority maintained bridges is 70 years. A long-term plan is being developed to upgrade the bridges using the PONTIS Bridge Management Program, to establish a priority list for the upgrading of Authority owned bridges systemwide. This program also establish a cost effective approach for the upgrading (maintenance, rehabilitation and replacement) of the Authority's deteriorated bridges with minimal disruption of vehicular, transit, or commuter rail services systemwide. This program also identifies structures that need maintenance services such as cleaning clogged drain lines on bridges and painting of steel structures that have experienced extensive rust.

Highway Bridges
Throughout the system, there are several bridges that are anticipated for future repair or replacement because of their age and condition.

Railroad Bridges
Fifteen MBTA railroad bridges represent the priority in needs for future replacement/rehabilitation to improve the long-term soundness of the structure. These include Washington Street, West Street, East Street, Talbot and Woodrow Avenue, Columbia Road, Mass. Avenue, and the Merrimack River Bridge.

Transit Bridges
Five transit bridges have been identified as future candidates for rehabilitation, including Savin Hill Underpass and Ashmont Station.

Columbia Road Signal Interlocking System
This project involves redesigning and installing a signal interlocking system at milepost 224 to facilitate reconstruction of the Dorchester Commuter Rail line (Columbia Road, Massachusetts Avenue, and Quincy Street bridges). This will allow single-track operation for service to continue during reconstruction of the Dorchester line.



Dorchester Line Bridge Reconstruction
This project involves the completion of the redesign and replacement of the Columbia Road, Massachusetts Avenue, and Quincy Street bridges with a single span, ballasted deck, welded steel plate girder type bridge. Construction will follow the interlocking project above.

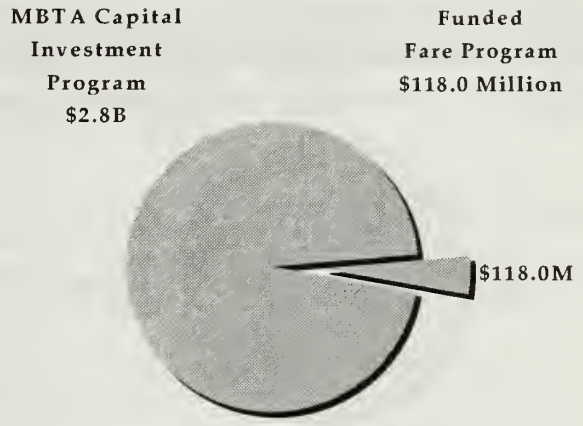
Beacon and Roger Bridges (Newton)
This project involves the replacement of the superstructures for the two bridges, catenary improvements, rehabilitation of bridge abutments, reinstallation of necessary utilities, drainage repairs and installation of approach slabs.

Fort Point Channel Bridge (MHD)
This project involves final project elements for the Fort Point Channel Bridge reconstruction, a joint project with MHD.

Merrimack River Bridge Redesign
This project involves the design for rehabilitation of Merrimack River Bridge, reducing it from a two span to a single span bridge.

Pedestrian/Utility Bridges Inspection
This project involves the inspection of the 58 pedestrian and 46 utility bridges over the MBTA's transit and commuter rail systems to determine levels of rehabilitation and reconstruction required by each bridge.

PROGRAM OVERVIEW



The MBTA's fare collection system differs by mode and includes station-based, vehicle-based and system control equipment. On the subway/rapid transit system, fare collection equipment includes 475 turnstiles at 90 barrier fare collection locations. Fare collection booths and exit gates at rapid transit stations are also considered to be part of the fare collection system as well as on-board conductors, who perform fare collection on the commuter rail system. There is no associated capital equipment.

The existing fare collection equipment is 25 to 30 years old. Continued upkeep of the existing system is increasingly expensive due to its age and the cost of replacement of parts. The Authority is currently finalizing specifications for the procurement of a new Automated Fare Collection (AFC) system. This procurement calls for new fare collection equipment for the Authority's subway, bus, trackless trolley, and Green Line services. All existing equipment fare collection will be replaced. The overall project has three major components: procurement of the AFC equipment and related construction work required for its installation, initiation of a new station management structure that provides an enhanced level of customer convenience, and installation of a state-of-the-art telecommunications infrastructure that will improve station security. The Revenue Department also maintains and operates control, counting, and security equipment through a central computer system at a central facility. Wayside equipment has a 17-year useful life. Associated software is also maintained.

The current program devotes $118.0 million toward the installation of a new Automatic Fare Collection (AFC) system. Fare equipment represents 4.2% of the total capital investment program.

FUNDED PROJECTS: FY03 – FY07

The AFC system will generate an annual savings of over $4.5 million on the operating budget.

Fare Equipment Upgrades
This purpose of this effort is to replace deteriorating fare equipment. This will allow the Authority to improve its fare collection efforts and reduce fare evasion

Automatic Fare Collection (AFC)
The AFC program will replace tokens and the existing collection system with ticket machines, customer service agents and turnstiles that accept both magnetic stripe and smart card technology. The AFC program also includes the procurement of an integrated central computer and software package and upgrade of the telecommunications and video monitoring systems. This dual system approach will offer an enhanced level of convenience to MBTA customers and provide the greatest flexibility for the Authority in establishing a fare policy that will maximize fare revenue while giving customers more purchasing options.

Fare Equipment: FY03 – FY07 Projects ($ in Millions)

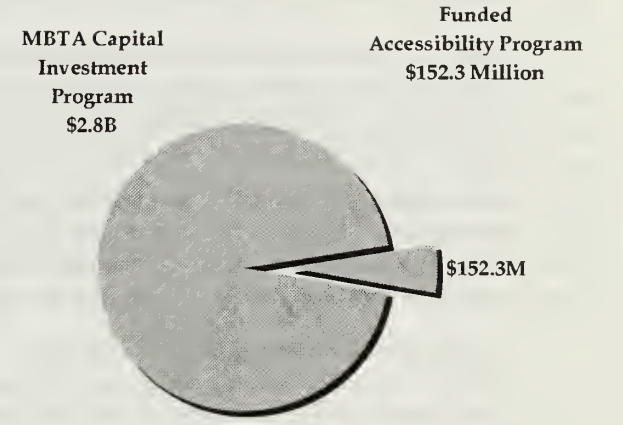
PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
AFC	$120.00	$1.99	$21.49	$42.18	$35.74	$18.60	$0.00	$118.01	$0.00
Total Program	**$120.00**	**$1.99**	**$21.49**	**$42.18**	**$35.74**	**$18.60**	**$0.00**	**$118.01**	**$0.00**

ANTICIPATED FUTURE NEEDS

There are currently no anticipated future needs for fare equipment.

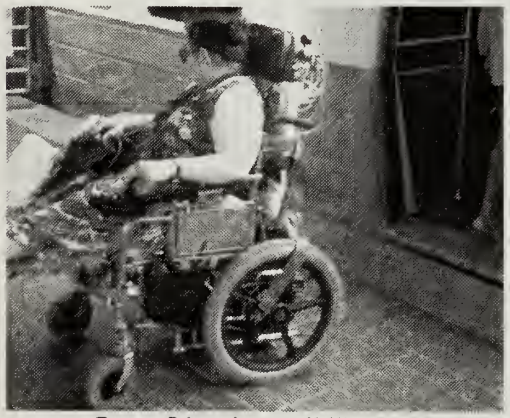
PROGRAM OVERVIEW

In response to the Americans with Disabilities Act (ADA) of 1990, the Authority developed an approved Key Station Plan as an initial step in carrying out its obligations. The ADA, a Title II Public Services Act, prohibits public transportation systems from discriminating against persons with disabilities. Title II includes requirements for key stations to be made accessible. The Department of Transportation has established specific requirements for developing systemwide program accessibility, including the need to work with the community of people who have disabilities to determine key stations.



Since 1990, the Authority has rapidly become a leader in efforts to achieve station accessibility. The MBTA has been working to bring its 80 identified key stations into compliance. To date, 50 key stations have been brought into compliance and 119 MBTA stations (including 69 "non-key" stations) are now accessible. In 1998, the Authority signed a Voluntary Compliance Agreement (VCA) with the Federal Transit Administration (FTA), committing to final compliance dates for the remaining 35 key stations.

The MBTA has programmed $152.3 million toward accessibility. This represents 5.4% of the total capital investment program. The majority of accessibility funding is devoted towards the Light Rail Accessibility Program (LRAP) for the Green Line. Another significant project involves accessibility improvements at the Charles/MGH Red Line station.



FUNDED PROJECTS: FY03 – FY07

Currently, there are 9 funded projects under accessibility, all of which will have a neutral impact on the Authority's operating budget.

Orange Line Haymarket Station Accessibility Improvements
The project involves the continued demolition and reconstruction of the Haymarket station in order for the station to meet ADA access improvement requirements.

Systemwide Key Station Improvements
This funding will help bring remaining stations into compliance with the ADA and includes Central Square, Harvard Square, and Jackson Square.

Green Line Accessibility Improvements
This program constructs accessibility (temporary platforms and lifts) at several Green Line stations. This enables the MBTA to service passengers with handicaps and disabilities in the period leading up to accessibility.

Orange Line Chinatown Southbound Access
To meet ADA access improvements, the Authority will expand the southbound platform level lobby at Chinatown to incorporate an elevator.

Fairmount Station Accessibility—Construction
This project will include the construction of two new mini-high level platforms with canopies, barrier-free access, addition of ramps to the platforms, an accessible path of travel, and improved signage.

Red Line Charles/MGH Station Reconstruction
The Authority has committed to completing improvements at Charles/MGH by 2003 (key station plan). The scope of improvements will include barrier-free access and gates, the addition of elevators and/or ramps, an accessible path of travel, improved signage and construction of a noise wall. A contribution by Partners/MGH is expected.

Green Line Light Rail Accessibility Program (LRAP)
In compliance with the ADA, the MBTA will focus on the improvement of 10 surface and Central Subway stations to make light rail stations accessible. Currently, 14 stations are accessible and 5 more will be accessible by the end of the year. All surface stations must be complete by 2001. 3 central subway stations have extensions through 2003.

Orange Line Malden Station Accessibility
This project will consist of design and construction for accessibility improvements at Malden Center by 2003. The improvements will be performed at both the Orange Line and Commuter Rail stations.

Miscellaneous Accessibility Projects
This effort anticipates key station efforts and other accessibility efforts expected to occur between FY03 and FY07.

Accessibility: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Haymarket Statn Access	$10.45	$9.28	$1.17	$0.00	$0.00	$0.00	$0.00	$1.17	$0.00
Syswid Key Stn Improv	$1.75	$1.63	$0.11	$0.00	$0.00	$0.00	$0.00	$0.11	$0.00
GL-Interim Access	$2.85	$2.18	$0.67	$0.00	$0.00	$0.00	$0.00	$0.67	$0.00
OL-Chinatown Elevator	$5.34	$4.79	$0.55	$0.00	$0.00	$0.00	$0.00	$0.55	$0.00
Fairmount Stn	$6.40	$0.30	$4.00	$2.10	$0.00	$0.00	$0.00	$6.10	$0.00
RL-Charles/MGH Statn	$27.00	$2.06	$8.37	$11.35	$5.22	$0.00	$0.00	$24.94	$0.00
Light Rail Acc Pgm (LRAP)	$135.20	$27.40	$35.11	$36.00	$22.85	$13.84	$0.00	$107.80	$0.00
OL-Malden Stn	$8.20	$0.46	$3.74	$3.49	$0.50	$0.00	$0.00	$7.74	$0.00
Misc ADA Projects	$5.00	$0.00	$0.00	$1.00	$0.75	$0.75	$0.75	$3.25	$1.75
Total Program	**$202.18**	**$48.11**	**$53.72**	**$53.95**	**$29.31**	**$14.59**	**$0.75**	**$152.32**	**$1.75**

ANTICIPATED FUTURE EFFORTS

The following projects have been identified as anticipated future efforts under the accessibility program.

Commuter Rail Accessibility Improvements
This project will provide accessibility improvements to commuter rail stations.

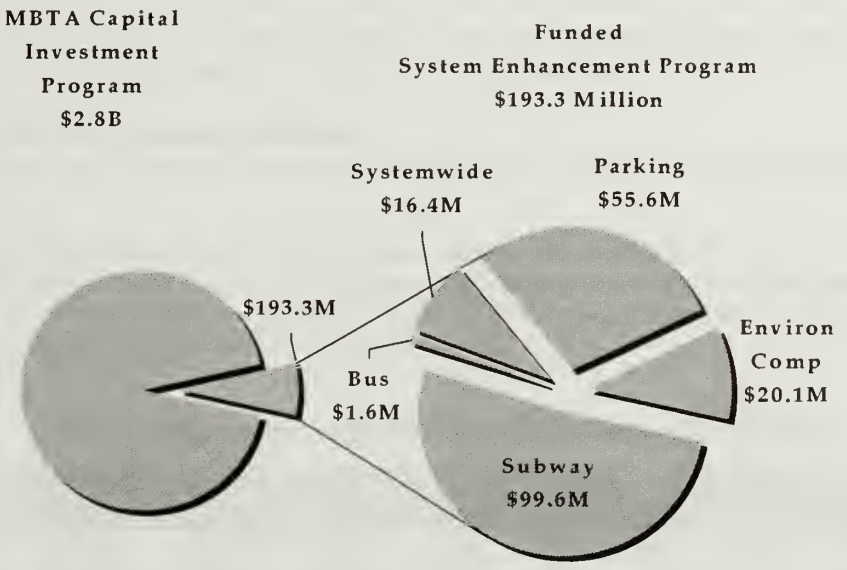
Replacement LED Signage
This effort will install or replace LED signage for ADA compatibility at 75 passenger stations.

Green Line Station Accessibility Upgrade
This effort will include accessibility upgrades to Green Line stations, such as Hynes Convention Center and Symphony.

Orange Line Malden Station Accessibility Construction
The project will fund the construction of barrier-free access, the addition of elevators and/or ramps, an accessible path of travel, improved signage, barrier-free gates and accessible curb ramps and parking.

PROGRAM OVERVIEW

System enhancement includes projects that enhance service for existing riders and attract more riders to the system. The most significant effort under the enhancement program is the reconstruction of the Green and Orange Line stations at North Station. This effort will provide a cross-platform Orange/Green Line transfer and offer improved connections to the commuter rail system. Two additional significant elements of the MBTA's enhancement efforts are parking expansion and environmental compliance. Parking expansion adds more capacity to existing lots in order to attract and better serve commuters. Environmental compliance enhances the safety and well being of both MBTA customers and employees. This section also covers the evaluation of other efforts, which may lead to implementation or application of new technologies to enhance MBTA service.



The CIP programs $193.3 million toward the system enhancement efforts. This represents 6.9% of the total capital investment program. The majority of this program is devoted to the rehabilitation of North Station and the expansion of existing parking facilities throughout the system.

SYSTEM ENHANCEMENT
SUBWAY

The current plan programs $99.6 million toward enhancement of the subway system. This represents 51.5% of the total system enhancement effort. This effort is devoted towards North Station Transportation Center, serving the Orange and Green Lines. The useful life of stations can be found under the Station section of this document.

FUNDED PROJECTS: FY03 – FY07

Currently, there are 2 funded projects underway for subway system enhancement. One is the construction of an enhanced Green/Orange transfer station at North Station and the other restores light rail service to the Arborway. These projects will have a positive impact on the Authority's operating budget.

Arborway Line Restoration (Planning & Design)
This project will support community planning and design efforts necessary to restore light rail service along the Arborway corridor.

Green and Orange Lines North Station Transportation Center—Phases III & IV
This represents the final phases of the North Station project including systemwide signals, track and construction of the track section under Causeway. Once completed, the North Station Transportation Center will be able to offer easier transfers between the Green Line, Orange Line and commuter rail.

System Enhancement—Subway: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Arborway Improv	$10.00	$0.00	$3.00	$7.00	$0.00	$0.00	$0.00	$10.00	$0.00
N. Stn Trans. Ctr-Ph. III & IV	$236.30	$146.73	$22.40	$35.00	$23.17	$9.00	$0.00	$89.57	$0.00
Total Program	**$246.30**	**$146.73**	**$25.40**	**$42.00**	**$23.17**	**$9.00**	**$0.00**	**$99.57**	**$0.00**

ANTICIPATED FUTURE EFFORTS

There are two anticipated enhancement projects for subway system enhancement.

Arborway Line Restoration (Construction)
This project will fund the construction and vehicle procurement efforts necessary to restore light rail service along the Arborway Corridor.

Green Line Auto Vehicle Identifier (AVI)
This would add AVI technology to Green Line vehicles and tie into the OCC.

SYSTEM ENHANCEMENT
COMMUTER RAIL

Currently, there are no funds devoted towards the commuter rail system enhancement program.

FUNDED PROJECTS: FY03 – FY07

Currently, there are no projects programmed for commuter rail system enhancement.

ANTICIPATED FUTURE EFFORTS

There are currently no anticipated future efforts for commuter rail system enhancement.

SYSTEM ENHANCEMENT
BUS

The current plan programs $1.6 million toward bus system enhancement. This represents 0.8% of the system enhancement effort.

FUNDED PROJECTS: FY03 – FY07

There are 3 funded projects related to bus system enhancement. These efforts will have a neutral impact on the Authority's operating budget.

"Smart Bus" Technology Enhancement
This project would allow the Authority to outfit 95 existing buses with "Smart Bus" technology, to provide automated visual and audio announcements to the ridership. This technology provides a more effective means of controlling bus movements and communicating with the riding public.

Systemwide Bus Signage
This project supports a dedicated crew to improve bus stop signage throughout the MBTA's bus system.

Bus Rapid Transit Development Study
This effort supports development of bus rapid transit systemwide.

System Enhancement—Bus: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Smart Buses	$2.00	$1.35	$0.65	$0.00	$0.00	$0.00	$0.00	$0.65	$0.00
Systemwide Bus Signage	$1.00	$0.12	$0.25	$0.20	$0.20	$0.20	$0.03	$0.88	$0.00
BRTD	$0.05	$0.03	$0.01	$0.01	$0.01	$0.00	$0.00	$0.02	$0.00
Total Program	**$3.06**	**$1.50**	**$0.91**	**$0.21**	**$0.21**	**$0.20**	**$0.03**	**$1.55**	**$0.00**

ANTICIPATED FUTURE EFFORTS

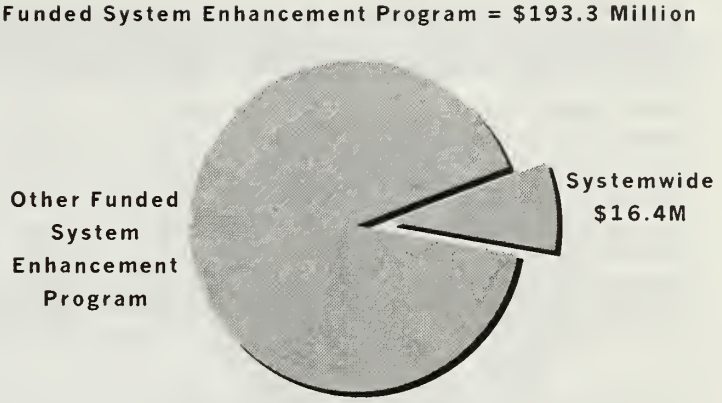
There is one anticipated project related to bus system enhancement.

Bus GPS/Dispatch System
This would equip buses with GPS devices to pinpoint their location and tie the information back to the OCC. This, combined with improved bus system communications, would greatly improve bus dispatch capabilities.

SYSTEM ENHANCEMENT
SYSTEMWIDE

This section represents enhancement efforts that affect the entire system. It also includes the evaluation of new technologies to enhance systemwide services.

The current plan programs $16.4 million towards systemwide enhancement. This represents 8.5% of the system enhancement effort.



FUNDING PROJECTS: FY03 – FY07

There are a total of 8 projects under systemwide enhancement. These efforts will have no impact on the Authority's operating budget.

Station Signage Program
This project will provide new and updated system and neighborhood maps and signs at various stations throughout the MBTA's rapid and light rail system.

Grade Crossing Program
The objective of this project is to improve safety at highway-rail transit grade crossings by the implementation of several safety enhancements that incorporate advanced signal/warning systems and gate technologies.

Passenger Security — Virtual Reality (VR)
The effort will enhance the effectiveness of transit security personnel in dealing with real-time, life threatening situations. The VR system will create realistic simulations of transit environments to aid the capability of security officials.

Water Transportation Infrastructure
This project funds the purchase, repair and maintenance of ferry boats, docking and related facilities for the provision of water transportation service to and from the City of Boston and surrounding communities within the MBTA's service district.

Information Kiosks/Signage (Smart Announcement Technology)
This project will provide kiosks and signage that are equipped with "smart announcement technology" systemwide. Kiosks will be located along the Silver Line.

Systemwide Revive and Guide Program
This effort provides new lighting, painting, signage, and other similar elements systemwide and at Downtown Crossing, Chinatown, Science Park, Orient Heights, and Broadway stations.

MBTA Art Program
This effort provides a resource for the public to utilize and enjoy. The Arts program includes an art restoration needs study, restoration work, support costs for the Adopt the Arts program, a station panel program, and an art bench program as well as new acquisitions for Government Center, Charles/MGH, and 3 Silver Line stations.

Systemwide System Enhancements
This effort supports various system enhancement efforts throughout the Authority.

System Enhancement—Systemwide: FY03 – FY07 ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Station Signage	$0.95	$0.00	$0.30	$0.50	$0.15	$0.00	$0.00	$0.95	$0.00
Grade Crossing Pgm	$0.38	$0.23	$0.15	$0.00	$0.00	$0.00	$0.00	$0.15	$0.00
Passenger Security/VR	$0.20	$0.17	$0.03	$0.00	$0.00	$0.00	$0.00	$0.03	$0.00
Water Transportation Infra.	$4.00	$0.00	$4.00	$0.00	$0.00	$0.00	$0.00	$4.00	$0.00
Information Kiosks/Sign	$1.75	$0.20	$0.70	$0.85	$0.00	$0.00	$0.00	$1.55	$0.00
Systemwide Revive/Guide	$8.90	$3.20	$1.70	$1.00	$1.00	$1.00	$1.00	$5.70	$0.00
MBTA Art Pgm	$1.25	$0.43	$0.32	$0.30	$0.20	$0.00	$0.00	$0.82	$0.00
Systemwide Enhancements	$4.77	$0.00	$0.00	$0.52	$0.90	$0.90	$0.90	$3.22	$1.55
Total Program	**$22.20**	**$4.23**	**$7.19**	**$3.17**	**$2.25**	**$1.90**	**$1.90**	**$16.42**	**$1.55**

ANTICIPATED FUTURE EFFORTS

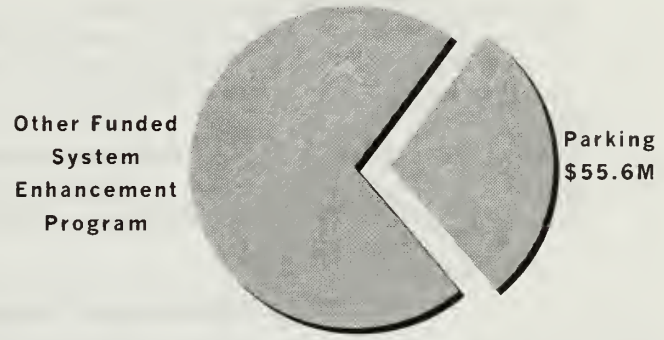
There are no anticipated systemwide enhancement efforts.

SYSTEM ENHANCEMENT
PARKING

MBTA parking facilities include both open surface parking lots and enclosed parking garages. There are approximately 42,000 parking spaces throughout the system.

In 1991, as part of commitments made under the Central Artery and State Implementation Plan (SIP), the state committed to building 20,000 new spaces. With the MBTA's contribution of 19,877 spaces to date, this commitment is nearly complete. Several additional programmed MBTA projects will contribute the balance necessary to meet the commitment goal.

Funded System Enhancement Program = $193.3 Million



The current plan devotes $55.6 million toward parking enhancement, which represents 28.8% of the total system enhancement effort. The most significant effort is the construction of a new station with over 2,400 spaces in Woburn. The majority of other projects are also at commuter rail stations. The useful life of parking lots can be found under the Systemwide Facilities section of this document.

FUNDED PROJECTS: FY03 – FY07

There are currently 7 parking projects in various stages. Together, they would provide about 3,400 spaces for MBTA commuters. These projects will have a neutral impact on the Authority's operating budget.

Walpole Commuter Rail Station
This project will provide 300 parking spaces for Walpole station, platform extension, the construction of mini-high platform and making the station accessible to all passengers.

Parking Enterprise Account
This effort creates a Parking Enterprise Fund to fund or subsidize the construction of various parking garages and/or facilities around the MBTA's commuter rail and rapid rail system. Potential project sites include Natick (494 spaces), Newton (102 spaces), Beverly (550 spaces), Bridgewater (500 spaces), Whitman (300 spaces) and Rockport (94 spaces).

North Quincy Parking Garage
This project will construct new surface and structured parking facility at the North Quincy Red Line Station providing approximately 1,189 spaces, of which 111 would be additional parking spaces.

System Park and Ride Support
This grant funds support activities necessary to initiate and advance parking expansion projects. Activities include appraisals and conceptual designs.

Wilmington Station and Parking
The project consists of the design and construction of a new station, a 225-space commuter parking lot, accessibility improvements and mini-high platforms, track and signal work, aesthetic improvements to the MBTA's maintenance of way facility and the construction of 800 feet of roadway adjacent to the station.

Hamilton/Wenham Commuter Rail Station
The project includes the addition of 200 parking spaces and the reconstruction of the platform and mini-high platform on the eastern side of the track. Existing platforms on the west side will be demolished. This will augment parking capacities, and improve traffic flow in the area.

Gloucester Intermodal Commuter Rail Station Design and Improvements
The project will consist of general station improvements, including expanding parking from 33 to 160 spaces, establishing a bus layover area, and improving accessibility.

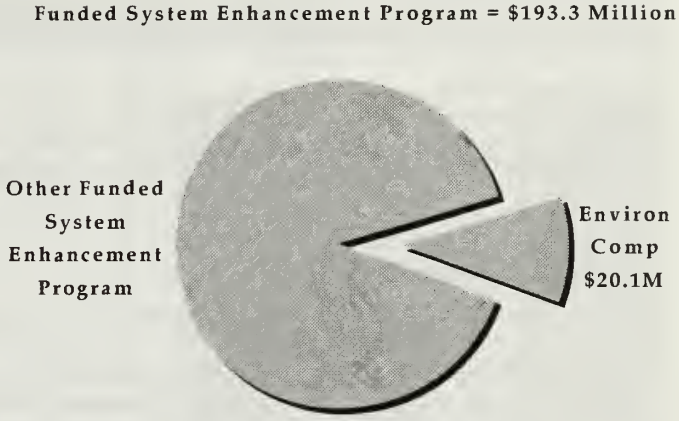
System Enhancement—Parking: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Walpole Stn	$2.65	$0.00	$1.95	$0.70	$0.00	$0.00	$0.00	$2.65	$0.00
Parking Enterprise	$24.60	$0.00	$2.70	$7.00	$3.50	$5.00	$6.40	$24.60	$0.00
North Quincy Garage	$19.00	$0.00	$3.50	$9.00	$6.50	$0.00	$0.00	$19.00	$0.00
System Park/Ride Support	$11.35	$9.73	$0.70	$0.18	$0.18	$0.18	$0.18	$1.43	$0.19
Wilmington Stn	$10.96	$7.11	$3.19	$0.65	$0.00	$0.00	$0.00	$3.85	$0.00
Hamilton/Wenham Stn	$3.35	$2.57	$0.78	$0.00	$0.00	$0.00	$0.00	$0.78	$0.00
Gloucester Intermodel Fac	$3.63	$0.32	$1.57	$1.29	$0.45	$0.00	$0.00	$3.31	$0.00
Total Program	**$75.54**	**$19.73**	**$14.39**	**$18.83**	**$10.63**	**$5.18**	**$6.58**	**$55.61**	**$0.19**

ANTICIPATED FUTURE EFFORTS
The following project has been identified as a future parking enhancement effort.

Red Line Quincy Adams Parking
Implementation of the Quincy Adams Station parking garage design is anticipated.

SYSTEM ENHANCEMENT
ENVIRONMENTAL COMPLIANCE



The MBTA understands the importance of performing in a safe, healthy environment. Therefore, to ensure the safety of the environment, the Authority's Environmental Management Department conducts regular comprehensive environmental audits of facilities to identify non-compliance issues and to develop strategies and schedules for bringing the facilities into compliance. Standard operating procedures for environmental issues are established for all facilities. Areas of oversight include underground storage tanks, handling and disposal of hazardous materials, storm water and wastewater management, air quality issues and any other regulated environmental matter.

The environmental compliance program also includes the identification, design and implementation of environmental mitigation measures, as necessary and appropriate, throughout the MBTA system. The Authority also responds to environmental clean up requirements, using Licensed Site Professionals as required under state regulations. Finally, the Authority has a noise mitigation program.

As shown in the graph above, the current plan programs $20.1 million towards environmental compliance. This represents 10.4% of total system enhancement expenditures.

FUNDED PROJECTS: FY03 – FY07

There are 4 funded projects under the environmental compliance program. These projects will have a neutral impact on the Authority's operating budget.

South Boston Power Plant Phase II—Demolition
The MBTA and the Attorney General have established a schedule for the abatement and demolition of the South Boston Power Plant. Demolition cannot begin until the Phase I abatement work is complete

Environmental Compliance Management Efforts
The project involves the preparation of environmental remediation response documents and design remediation for oil and/or hazardous waste releases throughout the Authority, and provides environmental consulting services to audit.

Bus Wash Upgrades
In compliance with the Clean Water Act, the Authority is installing new washing equipment in all bus garages. This equipment will recycle water and reduce the volume of wastewater. This reduction will improve the ability of the water oils separators to extract the heavy metals and petroleum byproducts, reducing the discharge to below permit levels.

Noise Mitigation Program
The funding for this project has been set-aside for anticipated noise mitigation needs.

System Enhancement—Environmental Compliance: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
S. Bos. Pwr Plant-Ph. II	$18.17	$15.16	$3.01	$0.00	$0.00	$0.00	$0.00	$3.01	$0.00
Environ Compl Mgt Eff.	$23.01	$11.43	$5.50	$4.15	$1.50	$0.43	$0.00	$11.58	$0.00
Bus Wash Upgrades	$2.05	$1.57	$0.48	$0.00	$0.00	$0.00	$0.00	$0.48	$0.00
Systemwide Noise Mit'n	$16.67	$11.63	$1.04	$1.00	$1.00	$1.00	$1.00	$5.04	$0.00
Total Program	**$59.90**	**$39.79**	**$10.03**	**$5.15**	**$2.50**	**$1.43**	**$1.00**	**$20.11**	**$0.00**

ANTICIPATED FUTURE EFFORTS

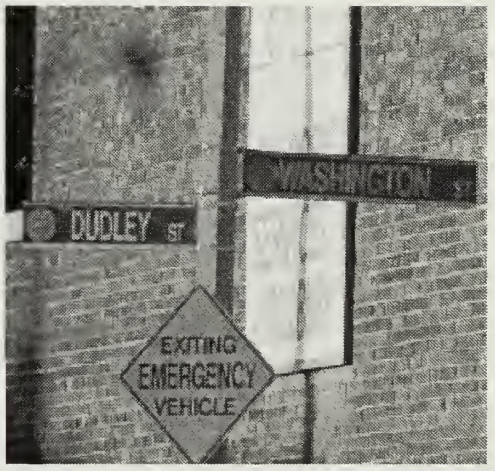
There is one future effort that has been identified for environmental compliance.

Fitchburg Roundhouse – Asbestos Abatement

This project will remove and dispose of asbestos in the partially collapsed roundhouse at Fitchburg.

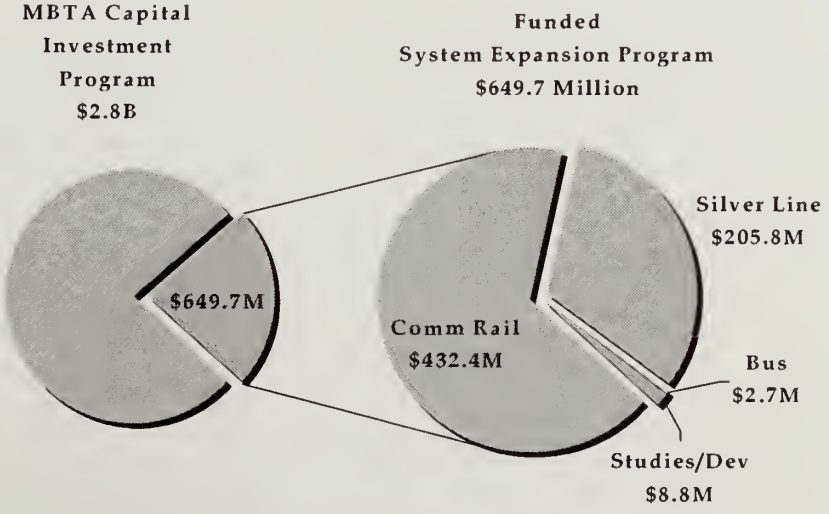
PROGRAM OVERVIEW

The Authority is continually working to expand the scope of its services in order to offer public transportation to a larger segment of the greater Massachusetts population. Much of the system expansion work underway is included as mitigation under the State Implementation Plan (as developed under the Clean Air Act) or under the Central Artery Vent Certification (as issued by DEP in 1991).



Since 1985, the Authority has increased the number of revenue miles operated annually by 14 million miles. Much of this is due to large-scale system expansions including new commuter rail service to Worcester, Middleborough, Plymouth and Newburyport. The current program focuses on construction of the Silver Line to provide new service within Boston's urban corridor and extension of commuter rail service to the South Shore through the Greenbush commuter rail project.

Over the last few years, new commuter rail stations have opened along the Worcester line and the Old Colony line at JFK/UMass. Three new commuter rail lines are in the preliminary design phase, ultimately serving Scituate (Greenbush), Fall River and New Bedford. Additionally, in 2002, the first section of the Authority's new Silver Line will open, with service between Dudley Square and Downtown Crossing. In 2003, a second section will open, providing service between South Station and the South Boston Waterfront.



Smaller scale evaluation studies of potential future expansions are also being performed, including the feasibility of constructing new stations or extending existing lines.

The current program devotes $649.7 million towards system expansion. This represents 23.1% of the total capital investment program. Most of this effort is designated for the Silver Line and commuter rail expansion programs.

SYSTEM EXPANSION
SUBWAY

Currently, the Authority has no projects funded for subway system expansion. A proposed subway expansion effort is the extension of the Green Line to Somerville.

FUNDED PROJECTS: FY03 – FY07

Currently, there are no subway expansion projects programmed.

ANTICIPATED FUTURE EFFORTS

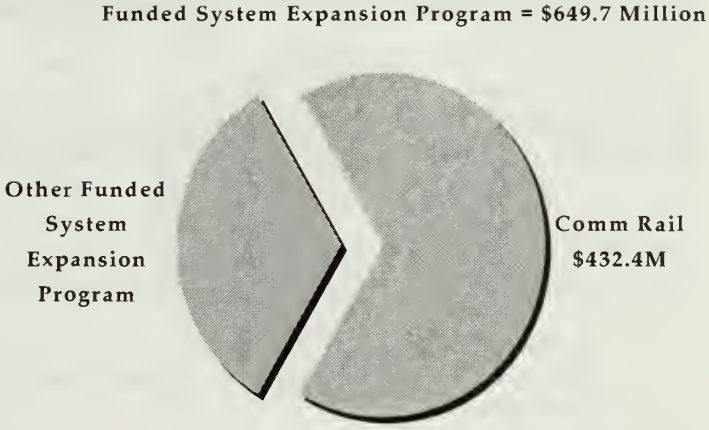
Two anticipated projects have been identified for subway expansion.

Green Line Medford Extension
Long-range plans include extension of the Green Line from Lechmere Station to the vicinity of Tufts University in Medford.

Blue Line/Red Line Connector
Long-range plans include a connection between the Red Line at Charles/MGH and the Blue Line at Bowdoin or Government Center.

SYSTEM EXPANSION
COMMUTER RAIL

The current plan programs $432.4 million toward the expansion of the commuter rail system. This represents 66.6% of the system expansion effort. The majority of the funding devoted toward commuter rail expansion is for the Greenbush project. Other major efforts include new stations on the Old Colony and Worcester lines, and the extension of service to New Bedford and Fall River. The useful lives of both stations and track work can be found in the Station and Track sections of this document, respectfully.



FUNDED PROJECTS: FY03 – FY07

There are 4 funded projects underway for commuter rail system expansion. Two (Greenbush and Fall River/New Bedford) are early design efforts and two are construction projects. As the Authority continues its efforts to meet increasing demand for its services, operating costs will increase for operations and maintenance. Therefore, these efforts will have a negative impact on the Authority's operating budget.

South Salem Station
This project will design and construct a new ADA/MAAB compliant commuter rail station containing approximately 150-200 parking spaces. This facility will add passenger capacity to the Newburyport/Rockport line and result in a reduction of low occupancy vehicle emissions along the I-93 and Rt. 128-transportation corridor.

New Bedford/Fall River Extension – Phase I
This project includes design and construction to support the extension of MBTA services to New Bedford and Fall River. Current efforts include the rehabilitation of bridges in New Bedford and Fall River, and design and EIR efforts north and south of Cotley.

Old Colony Line Rehabilitation: Middleborough and Plymouth
This represents the completion of final elements in support of the Old Colony lines that were reconstructed and opened for service in 1997.

Old Colony Greenbush Rehabilitation Project
The project consists of the rehabilitation of the Old Colony Greenbush Branch. The scope includes construction of 17.1 miles of track, 7 stations, a layover facility, a tunnel through historic Hingham Square and the purchase of necessary rolling stock.

System Expansion—Commuter Rail: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
South Salem Station	$8.10	$0.00	$0.00	$0.00	$0.00	$1.30	$6.80	$8.10	$0.00
New Bedford/Fall River-Ph I	$60.58	$27.43	$19.05	$14.09	$0.00	$0.00	$0.00	$33.14	$0.00
Old Colony Line Rehab.	$106.57	$98.35	$4.25	$3.35	$0.50	$0.00	$0.12	$8.22	$0.00
OCRR/Greenbush Ext.	$408.70	$25.75	$57.51	$128.28	$144.86	$52.30	$0.00	$382.95	$0.00
Total Program	**$583.95**	**$151.53**	**$80.81**	**$145.72**	**$145.36**	**$53.60**	**$6.92**	**$432.42**	**$0.00**

ANTICIPATED FUTURE EFFORTS

There are three projects that have been identified as anticipated future efforts for commuter rail expansion.

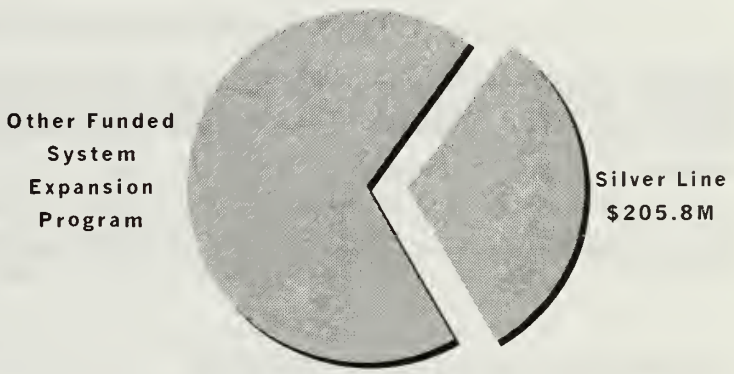
Yawkey Station
This project involves the potential of full time service to a greatly enhanced Yawkey Station near Fenway Park along the Framingham line.

T.F. Green Airport Service
The project involves the potential of full-time service to T.F. Green Airport in Rhode Island.

New Bedford/Fall River Extension – Phase II
This project involves the construction of the extension of the commuter rail network from Boston to the cities of Fall River and New Bedford, also providing service to the towns of Stoughton, Easton, Raynham, Taunton, Lakeville, Berkeley, and Freetown.

SYSTEM EXPANSION
SILVER LINE

The MBTA is constructing a new line to operate as part of its core downtown transit system. This Silver Line will combine bus rapid transit services along Washington Street and the South Boston Piers Transitway into a single line. The new Silver Line will provide connections between residential neighborhoods and job centers in the Financial District and the new South Boston Waterfront. Service will also be coordinated with Massport to provide service to Logan Airport through the existing Ted Williams tunnel.



There are 13 Silver Line stations under construction. A total of 10 new stations along Washington Street will open in 2002. This line will terminate at the existing Dudley Station in Roxbury. Three additional Silver Line stations along the South Boston Piers Transitway will open in 2003.

Vehicle procurement for Washington Street and the South Boston Piers Transitway portions of the Silver Line are underway and can be located under the Revenue Vehicle program.

The current plan programs $205.8 million toward Silver Line system expansion. This represents 31.7% of the system expansion effort. The majority of this effort is devoted towards the South Boston Piers Transitway project. The useful lives of both stations and tunnels can be found in the Station and Facilities portions of this document, respectively.

FUNDED PROJECTS: FY03 – FY07

There are 4 efforts currently related to the Silver Line. One is related to Washington Street, two projects are related to the South Boston Piers Transitway and the remaining project involves conceptual planning and design to eventually connect the two. These efforts will have a negative impact on the Authority's operating budget. The installment of the Silver Line will lead to higher operating costs for operations and maintenance.

Silver Line Phase I:
Washington Street Replacement Service
The Washington Street Replacement Service contract is a joint project with the Massachusetts Highway Department (MHD) for the design and reconstruction of Washington Street from Dudley Station to downtown. The MBTA is responsible for the design of the project and the costs of all transportation elements such as station structures; work will include full depth construction from building edge to building edge. A $17.0 million budget for vehicle acquisition is included under the Revenue Vehicle program.

Silver Line Phase II:
South Boston Transitway
This is a one-mile long tunnel extending from South Station to the pier's area with 3 stations: South Station, Courthouse Station, and World Trade Center Station. A $31.7 million budget for vehicle acquisition is included under the Revenue Vehicle Program. A maintenance facility on Southampton Street for these vehicles is also funded by this line item.

South Boston Transitway Reserve
This funding represents a contingency budget, set as a placeholder in the plan, to ensure that the Authority has sufficient financial capacity to fully fund the Transitway project.

Silver Line Phase III:
Conceptual Planning and Preliminary Design
Phase III of the Silver Line will connect Washington Street to South Station and Logan Airport. This effort will initiate Phase III design.

System Expansion—Silver Line: FY03 – FY07 Projects ($ in Millions)

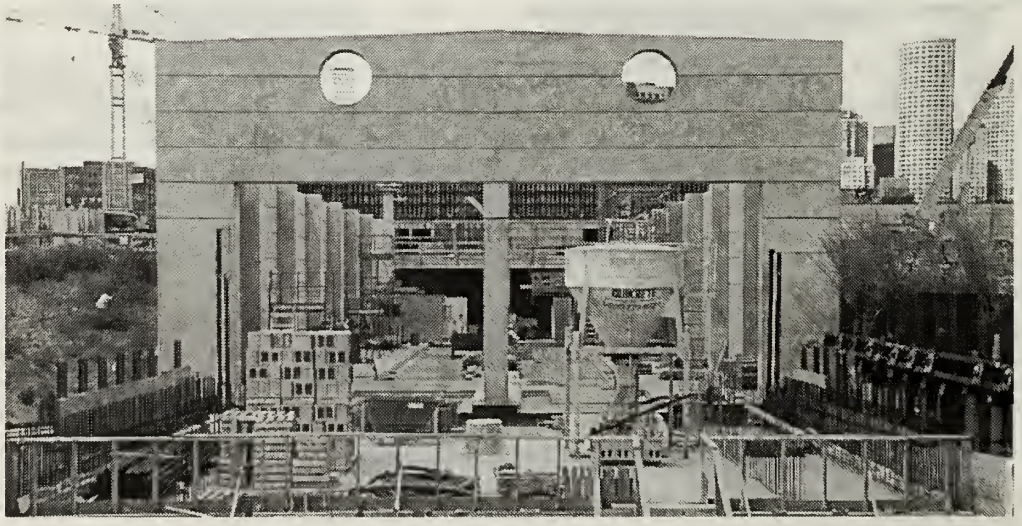
PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Wash. St. Repl. Srvce	$12.31	$10.67	$1.64	$0.00	$0.00	$0.00	$0.00	$1.64	$0.00
S. Boston Transitway	$558.90	$447.45	$68.01	$49.32	($5.88)	$0.00	$0.00	$111.45	$0.00
S. Boston Transitway--Rsrv	$50.00	$0.00	$0.00	$25.00	$25.00	$0.00	$0.00	$50.00	$0.00
SL Ph. III- Plng/Cnstr.	$42.71	$0.00	$2.20	$8.01	$5.00	$10.00	$17.50	$42.71	$0.00
Total Program	**$663.92**	**$458.12**	**$71.85**	**$82.33**	**$24.12**	**$10.00**	**$17.50**	**$205.80**	**$0.00**

ANTICIPATED FUTURE EFFORTS

The following projects have been identified as future efforts under Silver Line expansion.

Silver Line Phase III
This effort will continue the design and construction of Phase III initiated above. The project would involve the construction of a tunnel between South Station and Boylston Street, providing a one seat ride from Dudley to Downtown Boston through to South Boston and Logan Airport with connections to the Orange, Green and Red Lines. This will complete the Silver Line project.

Silver Line – Additional Studies
This effort would involve analysis and evaluation of potential further expansion of the Silver Line system south of Dudley Square.



SYSTEM EXPANSION
BUS

The current plan programs $2.7 million toward the expansion of the bus system. This represents 0.4% of the system expansion effort.

FUNDED PROJECTS: FY03 – FY07

Currently, there is one funded project for bus system expansion. This project will have a negative impact on the Authority's operating budget due to higher operating costs that will lead to increases in operations and maintenance. Useful life information for stations can be found in the Station section of this document.

South Station Bus Terminal
This represents the final efforts to construct the South Station Bus terminal and parking garage.

System Expansion—Bus: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
S. Stn Bus Terminal	$83.95	$81.24	$1.49	$0.70	$0.52	$0.00	$0.00	$2.71	$0.00
Total Program	**$83.95**	**$81.24**	**$1.49**	**$0.70**	**$0.52**	**$0.00**	**$0.00**	**$2.71**	**$0.00**

ANTICIPATED FUTURE EFFORTS

There are two anticipated future effort listed for bus expansion, both related to the Urban Ring.

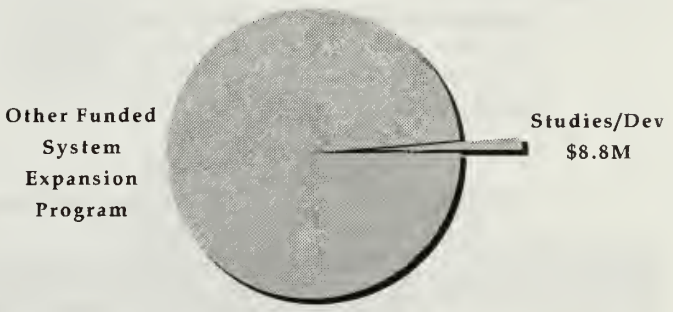
Urban Ring – Phase I
This project involves the implementation of a new, modified, limited stop cross-town and express bus route serving institutions and communities outside the downtown Boston core.

Urban Ring – Phase II
Environmental review, design and implementation of bus service with bus routes on busways, reserved lanes and/or mixed traffic employing intelligent transformation system (ITS) and four new commuter rail stations where bus routes connect with existing lines.

SYSTEM EXPANSION
STUDIES/DEVELOPMENT

The Authority is continually investigating the feasibility, the cost and the benefits of a variety of potential future expansion projects. These efforts may include large scale Major Investment Studies (MIS) in accordance with federal planning requirements, as well as smaller, localized studies to determine the impact of a new station. Also included under this section are the systemwide modeling and planning efforts conducted to identify and prioritize expansion needs.

The current plan programs $8.8 million toward the studies and system development. This represents 1.3% of the system expansion effort.



FUNDED PROJECTS: FY03 – FY07

There are currently 8 projects under studies and development system expansion. These efforts will have a neutral impact on the Authority's operating budget.

Program for Mass Transportation Update (PMT)
The PMT evaluates the costs and benefits of a variety of system expansion and enhancement opportunities. This effort consists of work with Central Transportation Planning Staff (CTPS) to develop a long-range plan of mass transportation improvements. The PMT was last updated in 1993.

Salem/Beverly Commuter Rail Station Improvements
This effort funds the design to upgrade Salem and Beverly Stations in preparation of adding 1,000 parking spaces, bus drop-offs and pickup areas, and accessibility platform extension.

Bus Facility Needs Assessment
This project is a master planning study of the bus maintenance facility needs for the MBTA that attempts to locate sites for such facilities. Currently, two are being built (Arborway and Southampton), one is scheduled for closure (Bartlett), and two will be retrofitted (Cabot and Charlestown). In addition, three other facilities – Lynn, Fellsway and Quincy – may require either rebuild or replacement.

North-South Rail Link
This project funds the study of linking North Station to South Station to provide commuters easier access to the financial district.

North Shore Major Investment Study (MIS)
This project will initiate a Major Investment Study (MIS), or evaluation of alternatives, to evaluate transportation needs for the North Shore. Components of the study will include gathering information, initiating a comprehensive public involvement effort, and identifying long- and short-term transportation needs in the corridor.

Unified Planning Work Program (MAPC)
This program funds various planning efforts regarding development of the MBTA system.

Commuter Rail Infrastructure Needs Assessment
This study will assess the need for commuter rail infrastructure needs for the system over the next 20 years. Included in the study will be train berths at North Station & South Station, rolling stock, maintenance facilities, storage yards and mid-day storage needs.

Circumferential Transit/Urban Ring MIS Study
The Urban Ring study is a federally funded Major Investment Study to evaluate and develop circumferential transit services to better access activity centers located just outside the central core. This project includes funding to file an expanded ENF with MEPA.

System Expansion—Studies/Development: FY03 – FY07 Projects ($ in Millions)

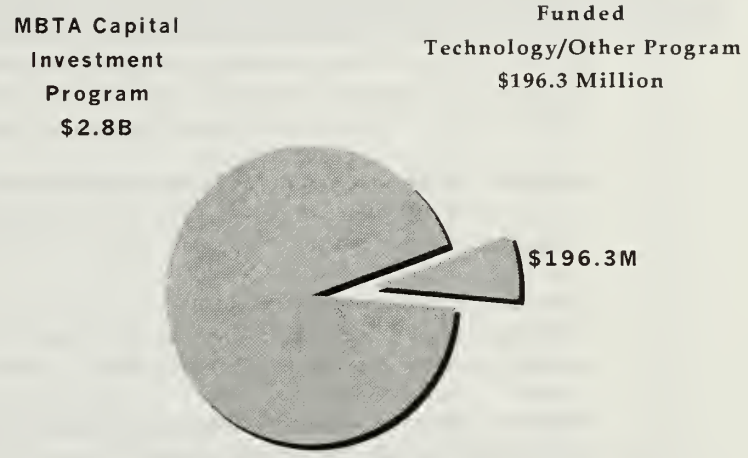
PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
PMT Update	$0.28	$0.18	$0.10	$0.00	$0.00	$0.00	$0.00	$0.10	$0.00
Salem/Beverly Station Impr.	$1.36	$0.13	$0.80	$0.44	$0.00	$0.00	$0.00	$1.24	$0.00
Bus Facility Analysis	$0.35	$0.13	$0.23	$0.00	$0.00	$0.00	$0.00	$0.23	$0.00
North-South Rail Link	$0.62	$0.40	$0.22	$0.00	$0.00	$0.00	$0.00	$0.22	$0.00
N. Shore MIS	$3.71	$0.70	$1.00	$1.00	$1.00	$0.00	$0.00	$3.00	$0.00
UPWP/MAPC	$3.70	$2.88	$0.13	$0.13	$0.19	$0.19	$0.20	$0.83	$0.00
CR Needs Assessment	$0.10	$0.00	$0.05	$0.05	$0.00	$0.00	$0.00	$0.10	$0.00
CT/Urban Ring	$6.62	$3.57	$1.00	$1.00	$1.05	$0.00	$0.00	$3.05	$0.00
Total Program	**$16.74**	**$7.98**	**$3.52**	**$2.62**	**$2.24**	**$0.19**	**$0.20**	**$8.76**	**$0.00**

ANTICIPATED FUTURE EFFORTS

The following project has been identified as a future effort for studies and development.

Systemwide Surveys/Planning
This funds miscellaneous efforts to support the development of system expansion projects. Included are ridership forecasts, passenger counts and other studies. Data received will provide the Authority information for determining the benefit of future expansion efforts.

PROGRAM OVERVIEW



As with any large organization, the Authority assumes a cost to conduct business. The Authority must provide administrative offices and a working environment equipped with computers, phones furniture and the necessary systems and support services to carry out their responsibilities effectively and efficiently. Also included are costs required to support administration of the capital program. These include the cost of bond issuance as well as engineering support services.

Much of the MBTA's computer equipment (PCs, printers, etc.) was upgraded as part of the year 2000 program. The Authority has one enterprise server (mainframe) that services the MBTA's computer network supporting over 2000 external devices. The server is assigned a 6-year useful life. The Authority has 1500 computers systemwide, which are impacted directly by the advances in technology. They have a useful life of 3 years. The police department also has 117 computers, each having a useful life of 5 years.

The current plan programs $196.3 million towards technology and other support efforts. The technology/other program represents 7.0% of the total capital investment program.

FUNDED PROJECTS: FY03 – FY07

There are 15 funded projects for technology/other program. These efforts will have a positive impact on the Authority's operating budget. Many of these projects will allow the MBTA to operate more efficiently and effectively (Year 2000 Program, State of Good Repair), thus reducing costs and allowing the Authority to provide better service throughout the system.

FMS Financial Software
This project will fund the replacement of the current FMS Financial Software (GEAC). Included in this project are software and hardware costs and consulting support to install and implement the software including business essential modifications.

FY01 Miscellaneous Project Initiatives
This project uses miscellaneous grant funding to close out specific projects.

Capital Maintenance Improvements
This effort will provide funding for new, discrete capital projects throughout the MBTA for all transportation modes and general administration programs on an as needed basis.

Miscellaneous Capital Projects (FY94-06)
This is a general grant composed of multiple projects throughout the Authority. Included in this grant are allocations for truck lifts, wheel truing machines, and other capital equipment.

FY03-FY12 Systemwide Capital Efforts
This represents administrative support functions for the MBTA's capital program.

Computer Technology Upgrades
The Authority needs to increase its data storage capacity, upgrade its software environment (move to UNIX), expand the WAN/LAN to remote locations, purchase additional servers, and continue to replace PC's on a regular basis. These efforts reflect increasing demand for electronic data interchange and demand for broader access to data across the Authority as the result of new and upgraded programs and ongoing network access expansion.

Schedule Fulfillment System (Bid/Dispatch Design) – Phase I
The phase will develop a comprehensive labor management and event recording system that would be universally deployed across the MBTA.

Centralized Employee Tracking
This program involves the implementation of People Soft Human Resource software to provide centralized employee tracking functionality as well as other components needed for a comprehensive human resources system.

Executive Office of Transportation and Construction (EOTC) Transit Program
This effort contributes to the transit program managed by EOTC.

Independent Engineering Review (IER)
This task order contract represents various planning and construction tasks that will be utilized accordingly by the Authority. The FTA requires that a value engineering study be performed for all the major projects that are federally funded. Other task orders include: a task order contract used to comply with Massachusetts Building Code; and a task order contract used to produce survey maps to support in-house design efforts, perform subsurface testing, soil borings and archeological surveys, and develop data for conservation commission submissions.

State of Good Repair (SGR)/Independent Engineering Services
This state of good repair effort funds an inventory of all MBTA capital assets, an assessment of their condition, and the establishment of a database to prioritize infrastructure reinvestment. In addition, Independent Engineering Consultant services are being used to support the Capital Management Group in its oversight of project management issues, capital program policy and capital dollar allocation.

I-90/I-93 Project Mitigation
This effort supports MBTA design and engineering efforts to ensure Central Artery Tunnel construction does not impact existing service.

Construction Contingency
This project provides for contingency funding for various ongoing construction projects as needed.

Infrastructure Initiatives
This project supports MBTA efforts in vehicle procurement and infrastructure maintenance needs.

Bond Issuing (including DBE)
This represents the Authority's cost of bond issuance and provides funding for various support programs for minorities, women and disadvantaged organizations.

Technology/Other: FY03 – FY07 Projects ($ in Millions)

PROJECT	Authorized Budget	Expended 6/02	FY03	FY04	FY05	FY06	FY07	Total FY03-FY07	Beyond FY07
Fin Mgmt System	$10.50	$3.67	$1.58	$4.45	$0.80	$0.00	$0.00	$6.83	$0.00
FY01 Misc Proj Initiatives	$1.00	$0.90	$0.10	$0.00	$0.00	$0.00	$0.00	$0.10	$0.00
Capital Maintenance Improv.	$6.00	$0.00	$3.00	$3.00	$0.00	$0.00	$0.00	$6.00	$0.00
Misc Capital Proj (FY94-06)	$14.88	$11.50	$2.23	$0.40	$0.50	$0.25	$0.00	$3.38	$0.00
FY03-12 Systwde Cap Eff.	$95.00	$0.00	$9.50	$9.50	$9.50	$9.50	$9.50	$47.50	$47.50
Computer Tech Upg	$7.00	$4.10	$0.50	$0.50	$0.50	$0.50	$0.50	$2.50	$0.40
Bid Dispatch Design	$0.44	$0.00	$0.16	$0.28	$0.00	$0.00	$0.00	$0.44	$0.00
MCRS Replacement Design	$0.44	$0.00	$0.44	$0.00	$0.00	$0.00	$0.00	$0.44	$0.00
Centralized Empl. Trkng	$4.60	$4.57	$0.03	$0.00	$0.00	$0.00	$0.00	$0.03	$0.00
EOTC Tran Prgrm	$15.80	$13.90	$0.35	$0.38	$0.38	$0.40	$0.40	$1.90	$0.00
Indep. Engin. Review (IER)	$1.58	$0.68	$0.30	$0.30	$0.30	$0.00	$0.00	$0.90	$0.00
State of Good Repair/IER	$1.91	$1.68	$0.23	$0.00	$0.00	$0.00	$0.00	$0.23	$0.00
Construction Contingency	$46.00	$0.00	$0.00	$0.00	$5.50	$18.50	$22.00	$46.00	$0.00
Infrastructure Initiatives	$75.46	$0.00	$0.00	$0.00	$10.95	$21.97	$42.54	$75.46	$0.00
Bond Issuing (incl. DBE)	$13.00	$8.45	$0.90	$1.00	$1.00	$0.90	$0.75	$4.55	$0.00
Total Program	**$293.61**	**$49.45**	**$19.31**	**$19.81**	**$29.43**	**$52.02**	**$75.69**	**$196.25**	**$47.90**

ANTICIPATED FUTURE EFFORTS

The following have been identified as future efforts for technology/other.

Value Engineering Services
This project will provide value engineering services as needed for various capital projects throughout the system.

Miscellaneous Capital Projects
This project is composed of multiple projects throughout the Authority, including allocations for truck lifts, wheel truing machines, other capital equipment and an Automatic Data Collection (ADC) initiative.

Data Storage Capacity Upgrade
This project will upgrade the Authority's disk storage equipment by replacing outdated equipment with current technology, increasing data storage capacity. It will also support future MBTA efforts such as the Employee Tracking System and the Automated Fare Collection (AFC).

Maintenance Control and Reporting System (MCRS) Replacement
This project will replace the MCRS system, Incident Reporting and ancillary system with a technology based system.

Schedule Fulfillment System (Bid/Dispatch) – Phase II
The second phase will identify the systems initiatives needed to implement all or part of the process and specifications required to support them.

Intranet Web Portal
This project will enable users to access applications and the Internet resources through a single customizable desktop window and provide users with current relevant information.

Internet Expansion Project
The scope of this project is to continually enhance the MBTA's website capabilities, including e-Commerce and other web functionality made possible through continued developments in technology.

Enterprise Datacenter – New Central Processing Unit (CPU)
This will provide a new CPU with more robust computer processing capacity to meet the demands of an AFC and FMS.

Massachusetts Bay Transportation Authority
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